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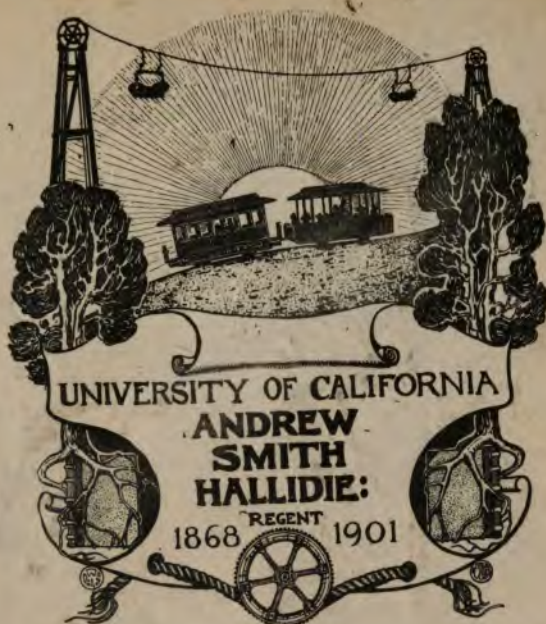
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NEW TABLES

FOR THE SOLUTION OF
GANGUILLET AND KUTTER'S FORMULA.

BY THE SAME AUTHOR.

SANITARY ENGINEERING:

A PRACTICAL TREATISE

ON THE

COLLECTION, REMOVAL, AND FINAL DISPOSAL OF
SEWAGE, AND THE CONSTRUCTION OF WORKS
OF SEWERAGE AND DRAINAGE.

With Special Chapters on the Disposal of Sewage Sludge and House Refuse; and numerous Hydraulic Tables, Formulæ, and Memoranda, including an extensive series of Tables of Velocity and Discharge of Pipes and Sewers, specially computed by Ganguillet and Kutter's Formula.

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NEW TABLES
FOR THE COMPLETE SOLUTION OF
GANGUILLET AND KUTTER'S FORMULA
FOR THE
FLOW OF LIQUID IN OPEN CHANNELS,
PIPES, SEWERS AND CONDUITS.

IN TWO PARTS.

PART I.

ARRANGED FOR 1,080 INCLINATIONS FROM 1 OVER 1, TO
1 OVER 21,120 FOR 15 DIFFERENT VALUES OF (n) .

PART II.

FOR USE WITH ALL OTHER VALUES OF (n) .

BY

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AUTHOR OF "SANITARY ENGINEERING," ETC.



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PREFACE.

GANGUILLET AND KUTTER's formula for calculating the "Flow of Liquid in Open Channels, Pipes, Sewers, and Conduits," is universally admitted by all hydraulic engineers of experience to be pre-eminently the most accurate and reliable for the purpose that has yet been elaborated. The recognition of this fact has created a demand for simple means for its solution, and one of such a nature as to afford precisely the same results as the original formula in its integrity, so as to reduce as far as possible the tax upon the time and labour of the busy professional man.

A description of the formula referred to is given in my book "Sanitary Engineering";* also a "modified form" of the formula suggested by me.

The use of this "modified form" was found to lessen very considerably the work of the computers when preparing the tables of velocity and discharge included in that book; this suggested the desirability of compiling a complete set of tables which should practically cover all cases of roughness and inclination likely to occur in practice, and has resulted in the production of the present volume.

The tables have for convenience been divided into two parts, and include the labour-saving tables from "Sanitary Engineering," which have been made still more "labour-saving" by supplying in each case the original logarithmic values of the various quantities where at any time they might be required.

The author's "modified form" of Ganguillet and Kutter's formula is "abbreviated" for use with the tables to

$$v = \frac{NR}{\sqrt{R + D}}$$

where (v) and (R) have the usual significance, and (N) and (D) comprehend all the other quantities which figure in the numerator and denominator respectively of the "modified form."

The tables give for each of the values of (n) and the particular inclination chosen, the values of the (N) in the numerator and the

* B. T. Batsford, Publisher, London, 1898.

2 7 5 3 3

portion of the denominator (D). It is evident that each pair of values (N) and (D) is applicable to an infinite number of values of (R) and (\sqrt{R}).

Part I. includes the values of (N), log. N and (D), as already described, and which form the great feature of the work, as well as all the improved labour-saving tables for use with it.

Part II. has been added for use in special cases which are not covered by the preceding. It includes all the necessary data and tables for the solution of the "modified form," the tables of values of $\left(\frac{l}{n}\right)$ and of \sqrt{S} , log. \sqrt{S} and $\left(a + \frac{m}{S}\right)$, from "Sanitary Engineering," having been extended and improved; a diagram for the graphic solution is also included. Thus a complete solution for Ganguillet and Kutter's Formula is presented.

The tables now offered to the engineering profession thus reduce the process of calculation to the lowest possible limits, and are of very wide application. As their object is simply to save labour, it does not appear that any apology for their production is required, and it is trusted that a labour-saving work of this magnitude will meet with appreciation by all engineers who require at any time to utilize the important formula of Ganguillet and Kutter.

E. C. S. MOORE, COLONEL, R.E.

September, 1900.

ERRATA.

A careful examination of the pages of this book after printing has led to the discovery of the following misprints:—

Page 66 (column 3).—The decimal points to values of log. N for sines of inclinations 1355 to 1425 inclusive, should be shifted one place to the right, viz. after the 0, not before as at present.

Page 166. *Depth on invert* '40—log. R. should read "1̄.8308732," log. A should read "1̄.4674157."

Page 168. *Depth on invert* '40—log. R. should read "2̄.7288132," \sqrt{R} should read "2̄.2814," log. A should read "2̄.2632957."

Page 169. *Depth on invert* '95—log. R. should read "2̄.8549912."

Page 170. *Depth on invert* '40—log. R. should read "2̄.8537419," log. A should read "2̄.5131732."

Page 172. *Depth on invert* '05—log. R. should read "2̄.1323428."

Page 174. *Depth on invert* '40—log. A should read "2̄.8653557."

Page 178. *Depth on invert* '40—log. A should read "1̄.1152331."

Page 180. *Depth on invert* '40—log. A should read "1̄.2175338."

Page 182. *Depth on invert* '40—log. A should read "1̄.3090531."

Page 185. *Depth on invert* '78—A decimal point should be placed in front of the value of \sqrt{R} , reading "59709."

Page 186. *Depth on invert* '40—log. R. should read "1̄.4674157."

TABLE XXIX., page 217.—The following corrections in above Table should be noted.

Line 6.—(n) should read "0.0095," and not "0.0195."

Line 23. columns 3 and 4.—

(n) should read "0.0440," and not "0.0444."

$\left(\frac{l}{n}\right)$ " " "41.16638," " " "41.16636."

" " " "0.3144613."

" " " '81—H.M.D. should read "53259."

" " " '82—value of \sqrt{R} should read "72970."

" " " '83—value of \sqrt{R} should read "72949."

Page 194.

Depth on invert '16—H.M.D. should read "19710."

" " " '40—log. A should read "0.0694757."

Page 195.

Depth on invert '52—H.M.D. should read "51240."

" " " '68—H.M.D. should read "58964."

" " " '90—H.M.D. should read "59607."

" " " '992—H.M.D. should read "52959."

Page 198. *Depth on invert* '05— \sqrt{R} should read "28526."

Page 202. *Depth on invert* '40—log. A should read "0.4216583."

E. C. S. MOORE,

Colonel R.E. (Ret.)

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Part I. includes the values of (N), log. N and (D), as already described, and which form the great feature of the work, as well as all the improved labour-saving tables for use with it.

Part II. has been added for use in special cases which are not covered by the preceding. It includes all the necessary data and tables for the solution of the "modified form," the tables of values of $\left(\frac{l}{n}\right)$ and of \sqrt{S} , log. \sqrt{S} and $\left(a + \frac{m}{S}\right)$, from "Sanitary Engineering," having been extended and improved; a diagram for the graphic solution is also included. Thus a complete solution for Ganguillet and Kutter's Formula is presented.

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Page 168. Depth on invert '40—log. R should read " $\bar{2}\cdot7288182$," \sqrt{R} should read " $\cdot2314$," log. A should read " $\bar{2}\cdot2682957$."

Page 169. Depth on invert '95—log. R should read " $\bar{2}\cdot8549912$."

Page 170. Depth on invert '40—log. R should read " $\bar{2}\cdot8537419$," log. A should read " $\bar{2}\cdot5181782$."

Page 172. Depth on invert '05—log. R should read " $\bar{2}\cdot1828428$."

Page 174. Depth on invert '40—log. A should read " $\bar{2}\cdot8653557$."

Page 178. Depth on invert '40—log. A should read " $\bar{1}\cdot1152331$."

Page 180. Depth on invert '40—log. A should read " $\bar{1}\cdot2175388$."

Page 182. Depth on invert '40—log. A should read " $\bar{1}\cdot8090531$."

Page 185. Depth on invert '78—A decimal point should be placed in front of the value of \sqrt{R} , reading " $\cdot52708$."

Page 186. Depth on invert '40—log. A should read " $\bar{1}\cdot4674157$."

Page 187. Depth on invert '95—R should read " $\cdot28516$."

Page 188. Depth on invert '40—log. A should read " $\bar{1}\cdot6612357$."

Page 190. Depth on invert '40—log. A should read " $\bar{1}\cdot8195983$."

Page 193.

Depth on invert '69—H.M.D. should read " $\cdot51592$."

" " " '77—log. R should read " $\bar{1}\cdot7245738$," log. A should read " $\bar{0}\cdot2982759$."

" " " '78—log. R should read " $\bar{1}\cdot7253027$," log. A should read " $\bar{0}\cdot3038290$."

" " " '79—log. R should read " $\bar{1}\cdot7258338$," A should read " $\bar{2}\cdot03809$," log. A should read " $\bar{0}\cdot3092241$."

" " " '80—log. R should read " $\bar{1}\cdot7261795$," log. A should read " $\bar{0}\cdot3144613$."

" " " '81—H.M.D. should read " $\cdot53259$."

" " " '82—value of \sqrt{R} should read " $\cdot72970$."

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E. C. S. MOORE,

Colonel R.E. (Ret.)

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INTRODUCTION.

DERIVATION OF THE TABULATED QUANTITIES.

THE quantities shown in the tables are derived from Ganguillet and Kutter's formula for calculating the flow of liquid in open channels, pipes, sewers and conduits, which is as follows :—

$$v = \frac{a + \frac{l}{n} + \frac{m}{S}}{1 + \left(a + \frac{m}{S}\right) \frac{n}{\sqrt{R}}} \sqrt{RS}$$

where

v = the mean velocity in feet per second.

R = the hydraulic mean depth in feet, and is obtained by dividing the area of the cross section of the stream by the length of the wetted perimeter, or border.

S = the sine of the inclination.

n = the coefficient of roughness depending on the nature of the surface of the channel (*vide* Table of Values of n^* , pages 214—216).

The quantities (a), (l) and (m) are constants derived from experiment, and with the formula in English feet, have the following values :—

$$a = 41.6604676$$

$$l = 1.8113250$$

$$m = 0.0028075$$

The following modification of the above formula, which I have introduced, tends to simplify its solution :—

$$v = \frac{\frac{l}{n} + \left(a + \frac{m}{S}\right)}{\sqrt{R} + \left(a + \frac{m}{S}\right) \frac{n}{\sqrt{R}}} R \sqrt{S}$$

The values of $\left(a + \frac{m}{S}\right)$ and \sqrt{S} are given in Table XXX. for a large number (1080) of inclinations, and also the values of $\left(\frac{l}{n}\right)$ in Table XXIX.

* Extracted from "Sanitary Engineering." B. T. Batsford, Publisher, London, 1898.

for a great many values of (n), so that it is comparatively easy to obtain the values both of the numerator and denominator of this fraction (excluding R and \sqrt{R} in either case) by combining the tabular values of the symbols corresponding to the required inclination and value of (n).

If now this were done for each of the inclinations already referred to, with one definite value of (n), then a series of values of the numerators (excluding R) and also of the denominators (excluding \sqrt{R}) can be obtained for each value of (S) in the series.

We may therefore write the general expression in the following abbreviated form :—

$$v = \frac{NR}{\sqrt{R+1}}$$

where

$$N = \left\{ \frac{l}{n} + \left(a + \frac{m}{S} \right) \right\} \sqrt{S}$$

$$\text{and } D = \left(a + \frac{m}{S} \right) n$$

To admit of practical use the tables have been computed for 15 different values of (n), so as to meet as far as possible every case that is likely to occur.

Instead, however, of simply transferring the tables in "Sanitary Engineering" already referred to, entirely fresh calculations have been made where necessary so as to avoid any possibility of cumulative errors; in order to ensure accuracy the component parts $\left(a + \frac{m}{S} \right)$ and $\frac{l}{n}$ were carried out in some cases to ten places of decimals, and where practicable the calculations were made arithmetically; the whole of the work has been most carefully checked and corrected.

The object of giving in the tables both the numerical and also the logarithmic value of (N), is to enable the value of (v) to be readily obtained either arithmetically or by logarithmic computation.

It should be remarked that $\log. (N)$ in the tables is the original logarithm obtained in each case, and the numerical value (N) is derived from it; the whole of the tabulated quantities are believed to be correct to the nearest decimal.

APPLICATION OF THE TABLES.

IN calculations for the velocity and discharge of water in pipes or conduits, it is always necessary to obtain the value of (A), the area of the cross section of the stream, and the \sqrt{R} where (R) is the hydraulic mean depth.

The following are examples of the use of the tables :—

EXAMPLE I.

PART I.

To ascertain the velocity of the discharge of a rectangular conduit 6 feet wide, constructed of dressed ashlar in fair condition, running 2 feet deep, with an inclination of 1 in 1000.

Preliminaries.

From list of values of (n), p. xvi. and Table XXVIII., p. 216, we may take $n = .015$.

$$A = 2 \times 6 = 12 \text{ sq. feet. } R = \frac{12}{2 + 6 + 2} = \frac{12}{10} = 1.2 \text{ feet and } \sqrt{R} = 1.095.$$

$$\text{now } v = \frac{NR}{\sqrt{R + D}}$$

and from page 56 we have

$$N = 5.225, \log. N = 0.7180704, \text{ and } D = .6670.$$

1st, calculating arithmetically :—

$$v = \frac{5.225 \times 1.2}{.667 + 1.095} = \frac{6.27}{1.762} = 3.558 \text{ feet per second.}$$

$$Q = Av = 12 \times 3.558 = 42.69 \text{ cubic feet per second.}$$

2nd, by logarithmic method :—

	$\log. N = 0.7180704$
$D = .667$	$\log. R = 0.0791812$
$\sqrt{R} = 1.095$	0.7972516
$\log. 1.762 =$	0.2460059
$\log. v = \log. 3.5583$	$= 0.5512457$ by subtraction.
$\log. A = \log. 12$	$= 1.0791812$
$\log. Q = \log. 42.699$	$= 1.6304269$

$\therefore v = 3.5583$ feet per second and $Q = 42.699$ cubic feet per second.

EXAMPLE II.

To ascertain the discharge of an 8-foot circular sewer, constructed of dressed ashlar in "fair" condition, running one-half full and having an inclination of 1 in 1000.

Preliminaries.

(*n*) may be taken from the above conditions to be .015 in accordance with Table XXVIII., the values (*N*), $\log. N$, and (*D*) are given at p. 56, and are the same as in the previous example.

$$N = 5.225, \log. N = 0.7180704, \text{ and } D = .6670$$

$$\text{From Table II., p. 166. } R = 8 \times .250 = 2 \quad \therefore \sqrt{R} = 1.4142136$$

$$,, \text{ Table XXI., p. 205. } A = \frac{50.266}{2} = 25.133 \text{ sq. feet.}$$

$$\text{now } v = \frac{NR}{\sqrt{R} + D}$$

1st, calculating arithmetically:—

$$v = \frac{5.225 \times 2}{.6670 + 1.4142} = \frac{10.45}{2.0812} = 5.021 \text{ feet per second.}$$

$$Q = A v = 25.133 + 5.021 = 126.19 \text{ cubic feet per second.}$$

2nd, by logarithmic method:—

	$\log. N = 0.7180704$
$D = .6670195$	$\log. 2 = 0.3010300$
$\sqrt{R} = 1.4142136$	1.0190704
$\log. 2.0812331$	$= 0.3183207$
$\log. v = \log. 5.02087$	$= 0.7007797 \text{ by subtraction.}$
$\log. A \text{ from Table II., p. 166} =$	1.5940599
$2 \log. 8 = 2 \times 0.9030900 =$	1.8061800
$\log. Q = \log. 126.1884 =$	2.1010196

$\therefore v = 5.02087$ feet per second, and $Q = 126.1884$ cubic feet per second.

EXAMPLE III.

To ascertain whether a 9-inch pipe with an inclination of 1 in 150, and flowing 1.44 inches deep will have a self-cleansing velocity, and the amount discharged.

Preliminaries.

$$\text{Now } v = \frac{NR}{\sqrt{R} + D}$$

$$\text{From Table XXVIII., p. 216. } n = .013$$

$$,, \text{ Table IX., p. 180. } \log. R = 2.8687290 \quad \sqrt{R} = .27187$$

$$\log. A = 2.6592076$$

$$,, \text{ Table I., p. 18. } \log. N = 1.1706257$$

$$D = .54706070$$

By logarithmic method :—

$$\begin{array}{rcl}
 & & \log. N = 1.1706257 \\
 D = .54706 & & \log. R = \underline{2.8687290} \\
 \sqrt{R} = .27187 & & 0.0393547 \\
 \log. \underline{.81893} & = & \underline{1.9132468} \\
 \log. v = \log. 1.3369 & = & 0.1261079 \text{ by subtraction.} \\
 & \log. A & = \underline{2.6592076} \\
 \log. Q = \log. .060998 & = & \underline{2.7853155}
 \end{array}$$

$\therefore v = 1.3369$ feet per second, and $Q = .060998$ cubic feet per second.

The velocity will not be sufficient to keep the drain clear.

EXAMPLE IV.

It is required to find the velocity and discharge of an egg-shaped sewer 6 ft. \times 9 ft. (new form) flowing one-third full with an inclination of 1 in 1625 and rendered in neat cement.

Preliminaries.

(n) may be taken as equal to .0115, and thus, having an intermediate value beyond those provided for in Part I., we must use the "modified form."

$$v = \frac{\frac{l}{n} + \left(a + \frac{m}{S}\right)}{\sqrt{R} + \left(a + \frac{m}{S}\right)n} R \sqrt{S}$$

From Table XXIX., p. 217. $\frac{l}{n} = 157.50652$

„ Table XXX., p. 224. $a + \frac{m}{S} = \underline{46.22266}$
 $\log. 203.72918 = 2.3090532$

„ Table XXIII., p. 208. $\log. R = 0.0613724$

„ Table XXX., p. 224. $\log. \sqrt{S} = \underline{2.3945783}$
 0.7649989

„ Table XXIII., p. 208. $\sqrt{R} = 1.0757$

$\left(a + \frac{m}{S}\right)n = 46.22266 \times .0115 = \underline{.5316}$
 $\log. \underline{1.6073} = \underline{0.2060969}$

$\log. v = \log. 3.6216 = 0.5589020$ by subtraction.

„ Table XXIII., p. 208. $\log. A = \underline{0.9616131}$

$\log. Q = \log. 33.1524 = \underline{1.5205151}$

$\therefore v = 3.6216$ feet per second, and $Q = 33.1524$ cubic feet per second.

GRAPHIC METHOD.

EXAMPLE V.

To ascertain the velocity and discharge of an 8-foot circular sewer with an inclination of 1 in 1000, flowing half-full, where $n = .015$, as in Example II., but using the Graphic Method, where $v = c\sqrt{RS}$. Spread out carefully the Plate for the graphical determination of the value of (c) on a drawing board, and insert a pin at the intersection of the (n) line .015 with the "slope curve" 1 in 1000, and another in the scale of \sqrt{R} where $\sqrt{R} = 1.414$ as below; stretch a fine thread of silk between these two pins, and the intersection on the scale of (c) gives $c = 112.2$.

From Table II., p. 166. $R = 8 \times .250$

$$\log. 8 = 0.9030900$$

$$\log. 25 = 1.3979400$$

$$2)0.3010300$$

$$\log. \sqrt{R} = \log. 1.4142136 = 0.1505150$$

From Table XXX., p. 223.

$$\log. \sqrt{S} = \bar{2}.5$$

$$\log. c = \log. 112.2 = 2.0499929$$

$$\log. v = \log. 5.0177 = 0.7005079$$

$$\log. A \text{ from Table II., p. 166} = 1.5940599$$

$$2 \log. 8 = 2 \times 0.9030900 = 1.8061800$$

$$\log. Q = \log. 126.194 = \underline{\underline{2.1007478}}$$

$\therefore v = 5.0177$ feet per second, and $Q = 126.194$ cubic feet per second.

The results would be more accurate if it were practicable to read the value of (c) more correctly.

PART I.

TABLES FOR THE SOLUTION

OF THE "ABBREVIATED FORM"

OF

GANGUILLET AND KUTTER'S FORMULA.

$$v = \frac{NR}{\sqrt{R+D}} \text{ and } Q = Av$$

where

$$N = \left\{ \frac{l}{n} + \left(a + \frac{m}{S} \right) \right\} \sqrt{S}$$

$$D = \left(a + \frac{m}{S} \right) n$$

FOR SPECIAL VALUES OF (S) AND (n).

THE FOLLOWING VALUES OF (n)
 AS COMPILED FROM KUTTER, JACKSON, AND HERING, BY FLYNN
 ARE THOSE USED IN TABLE I. (pages 1—165).

$n = .009$	Well-planed timber, in perfect order and alignment ; otherwise, perhaps .01 would be suitable.
$n = .010$	Plaster in pure cement ; planed timber ; glazed, coated, or enamelled stoneware and iron pipes ; glazed surfaces of every sort in perfect order.
$n = .011$	Plaster in cement with one-third sand in good condition ; also for iron, cement, and terra-cotta pipes, well joined and in best order.
$n = .012$	Unplaned timber, when perfectly continuous on the inside ; flumes.
$n = .013$	Ashlar and well-laid brickwork ; ordinary metal ; earthenware and stoneware pipe in good condition, but not new ; cement and terra-cotta pipe not well jointed nor in perfect order ; plaster and planed wood in imperfect or inferior condition ; and, generally, the materials mentioned with $n = .010$, when in imperfect or inferior condition.
$n = .014$	Intermediate value.
$n = .015$	Second-class or rough-faced brickwork ; well-dressed stonework ; foul and slightly tuberculated iron ; cement and terra-cotta pipes, with imperfect joints and in bad order ; and canvas lining on wooden frames.
$n = .017$	Brickwork, ashlar, and stoneware in an inferior condition ; tuberculated iron pipes ; rubble in cement or plaster, in good order ; fine gravel, well rammed, $\frac{1}{4}$ to $\frac{3}{4}$ inches diameter ; and, generally, the materials mentioned with $n = .013$, when in bad order and condition.
$n = .020$	Rubble in cement in an inferior condition ; coarse rubble, rough-set in a normal condition ; coarse rubble set dry ; ruined brickwork and masonry ; coarse gravel, well rammed, from 1 to $1\frac{1}{4}$ inch diameter ; canals with beds and banks of very firm, regular gravel, carefully trimmed and rammed in defective places ; rough rubble, with bed partially covered with silt and mud ; rectangular wooden troughs, with battens on the inside 2 inches apart ; trimmed earth in perfect order.
$n = .0225$	Canals in earth above the average in order and regimen.
$n = .025$	Canals and rivers in earth of tolerably uniform cross-section, inclination, and direction, in moderately good order and regimen, and free from stones and weeds.
$n = .0275$	Canals and rivers in earth below the average in order and regimen.
$n = .030$	Canals and rivers in earth in rather bad order and regimen, having stones and weeds occasionally, obstructed by detritus.
$n = .035$	Suitable for rivers and canals with earthen beds in bad order and regimen, and having stones and weeds in great quantities.
$n = .05$	Torrents encumbered with detritus.

ERRATA.

A further careful examination of the pages of this book after printing has led to the discovery of the following misprints:—

Page 185. Depth on invert '78.—A decimal point should be placed in front of the value of \sqrt{R} , reading “·52708.”

Page 193.

Depth on invert '69—H.M.D. should read “·51592” instead of “·51228.”
“ ” ” '81—H.M.D. should read “·53259” instead of “·53252.”
“ ” ” '82—value of \sqrt{R} should read “·72970” instead of
“·73970.”
“ ” ” '83—value of \sqrt{R} should read “·72949” instead of
“·73033.”

Page 194. Depth on invert '16—H.M.D. should read “·19710” instead of
“·16710.”

Page 195.

Depth on invert '52—H.M.D. should read “·51240,” not “·41240.”
“ ” ” '68—H.M.D. should read “·58964,” not “·58364.”
“ ” ” '90—H.M.D. should read “·59607,” not “·50607.”
“ ” ” '992—H.M.D. should read “·52959,” not “·53959.”

E. C. S. MOORE,

Colonel R.E. (Ret.)

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	242.921	2.3854661	.87496948	222.796	2.3479069	.41663275	1
2	171.773	2.2349562	.87499474	157.542	2.1973974	.41666083	2
3	140.254	2.1469156	.87502001	128.634	2.1093573	.41668890	3
4	121.465	2.0844512	.87504528	111.402	2.0468933	.41671698	4
5	108.643	2.0360012	.87507055	99.642	1.9984438	.41674505	5
6	99.178	1.9964156	.87509581	96.961	1.9588587	.41677313	6
7	91.822	1.9629472	.87512108	84.215	1.9253908	.41680120	7
8	85.892	1.9389562	.87514635	78.777	1.8964002	.41682928	8
9	80.981	1.9083849	.87517162	74.272	1.8708294	.41685735	9
10	76.826	1.8855112	.87519688	70.462	1.8479562	.41688543	10
11	73.252	1.8648200	.87522215	67.184	1.8272658	.41691350	11
12	70.134	1.8459807	.87524742	64.325	1.8083765	.41694158	12
13	67.384	1.8285547	.87527269	61.802	1.7910009	.41696965	13
14	64.933	1.8124674	.87529795	59.554	1.7749141	.41699773	14
15	62.732	1.7974908	.87532322	57.586	1.7599879	.41702580	15
16	60.741	1.7834814	.87534849	55.709	1.7459290	.41705388	16
17	58.928	1.7703219	.87537376	54.046	1.7327699	.41708195	17
18	57.268	1.7579151	.87539902	52.525	1.7203636	.41711003	18
19	55.741	1.7461797	.87542429	51.124	1.7086286	.41713810	19
20	54.331	1.7350485	.87544956	49.831	1.6974958	.41716618	20
21	53.022	1.7244569	.87547483	48.630	1.6869067	.41719425	21
22	51.804	1.7143602	.87550009	47.513	1.6768105	.41722233	22
23	50.666	1.7047126	.87552536	46.469	1.6671634	.41725040	23
24	49.599	1.6954759	.87555063	45.491	1.6579271	.41727848	24
25	48.598	1.6866165	.87557590	44.572	1.6490682	.41730655	25
26	47.655	1.6781049	.87560116	43.707	1.6405570	.41733463	26
27	46.764	1.6699147	.87562643	42.891	1.6323673	.41736270	27
28	45.922	1.6620226	.87565170	42.119	1.6244756	.41739078	28
29	45.124	1.6544076	.87567697	41.387	1.6168611	.41741885	29
30	44.366	1.6470510	.87570223	40.692	1.6095050	.41744693	30
31	43.645	1.6399858	.87572750	40.031	1.6023903	.41747500	31
32	42.958	1.6330466	.87575277	39.401	1.5955015	.41750308	32
33	42.303	1.6263696	.87577804	38.799	1.5888250	.41753115	33
34	41.677	1.6198922	.87580330	38.226	1.5823580	.41755923	34
35	41.077	1.6136027	.87582857	37.675	1.5760589	.41758730	35
36	40.503	1.6074904	.87585384	37.149	1.5699471	.41761538	36
37	39.953	1.6015458	.87587911	36.644	1.5640030	.41764345	37
38	39.424	1.5957599	.87590437	36.159	1.5582176	.41767153	38
39	38.916	1.5901244	.87592964	35.693	1.5525825	.41769960	39
40	38.427	1.5846318	.87595491	35.244	1.5470903	.41772768	40
41	37.956	1.5792749	.87598018	34.812	1.5417339	.41775575	41
42	37.501	1.5740472	.87600544	34.396	1.5365066	.41778383	42
43	37.063	1.5689426	.87603071	33.994	1.5314023	.41781190	43
44	36.640	1.5639555	.87605598	33.606	1.5264157	.41783998	44
45	36.231	1.5590806	.87608125	33.231	1.5215413	.41786805	45
46	35.835	1.5543130	.87610651	32.868	1.5167742	.41789613	46
47	35.452	1.5496480	.87613178	32.517	1.5121096	.41792420	47
48	35.081	1.5450813	.87615705	32.177	1.5075434	.41795228	48
49	34.722	1.5406089	.87618232	31.847	1.5030715	.41798035	49
50	34.373	1.5362270	.87620758	31.528	1.4986900	.41800843	50

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	206·392	2·3145607	·45829608	192·607	2·2846721	·49995980	1
2	145·899	2·1640515	·45832691	186·196	2·1841684	·49999299	2
3	119·127	2·0760118	·45835779	111·205	2·0461241	·50002668	3
4	103·167	2·0135488	·45838867	96·308	1·9836611	·50006087	4
5	92·278	1·9650992	·45841956	86·142	1·9352124	·50009406	5
6	81·289	1·9255145	·45845044	78·637	1·8956281	·50012775	6
7	77·991	1·8920470	·45848132	72·805	1·8621611	·50016144	7
8	72·955	1·8630569	·45851220	68·104	1·8331715	·50019513	8
9	68·784	1·8374865	·45854309	64·210	1·8076015	·50022882	9
10	65·255	1·8146137	·45857397	60·916	1·7847291	·50026251	10
11	62·219	1·7939233	·45860485	58·081	1·7640391	·50029620	11
12	59·571	1·7750350	·45863573	55·610	1·7451511	·50032989	12
13	57·234	1·7576598	·45866661	53·429	1·7277764	·50036358	13
14	55·154	1·7415735	·45869750	51·486	1·7116904	·50039727	14
15	53·284	1·7265978	·45872838	49·741	1·6967151	·50043096	15
16	51·592	1·7125893	·45875926	48·162	1·6827071	·50046465	16
17	50·053	1·6994307	·45879015	46·725	1·6695489	·50049834	17
18	48·643	1·6870248	·45882103	45·409	1·6571484	·50053203	18
19	47·347	1·6752902	·45885191	44·199	1·6454092	·50056572	19
20	46·148	1·6641579	·45888279	43·080	1·6342774	·50059941	20
21	45·037	1·6535692	·45891368	42·042	1·6236892	·50063310	21
22	44·002	1·6434734	·45894456	41·077	1·6135938	·50066679	22
23	43·035	1·6338267	·45897544	40·174	1·6039475	·50070048	23
24	42·130	1·6245909	·45900632	39·329	1·5947121	·50073417	24
25	41·279	1·6157324	·45903721	38·535	1·5858540	·50076786	25
26	40·478	1·6072216	·45906809	37·787	1·5773436	·50080155	26
27	39·722	1·5990323	·45909897	37·081	1·5691547	·50083524	27
28	39·007	1·5911411	·45912985	36·413	1·5612640	·50086893	28
29	38·329	1·5835270	·45916074	35·781	1·5536508	·50090262	29
30	37·685	1·5761713	·45919162	35·180	1·5462950	·50093631	30
31	37·073	1·5690570	·45922250	34·608	1·5391812	·50097000	31
32	36·489	1·5621688	·45925338	34·064	1·5322933	·50100369	32
33	35·933	1·5554927	·45928427	33·544	1·5256176	·50103738	33
34	35·401	1·5490161	·45931515	33·048	1·5191415	·50107107	34
35	34·892	1·5427275	·45934603	32·573	1·5128533	·50110476	35
36	34·405	1·5366161	·45937691	32·118	1·5067423	·50113845	36
37	33·937	1·5306723	·45940780	31·681	1·5007990	·50117214	37
38	33·488	1·5248873	·45943868	31·262	1·4950144	·50120583	38
39	33·056	1·5192527	·45946956	30·859	1·4893892	·50123952	39
40	32·641	1·5137610	·45950044	30·471	1·4838889	·50127321	40
41	32·241	1·5084050	·45953133	30·098	1·4785334	·50130690	41
42	31·855	1·5031782	·45956221	29·738	1·4733070	·50134059	42
43	31·483	1·4980744	·45959309	29·390	1·4682036	·50137428	43
44	31·123	1·4930882	·45962397	29·054	1·4632178	·50140797	44
45	30·776	1·4882142	·45965486	28·730	1·4583442	·50144166	45
46	30·440	1·4834475	·45968574	28·417	1·4535779	·50147535	46
47	30·115	1·4787834	·45971662	28·113	1·4489142	·50150904	47
48	29·800	1·4742176	·45974750	27·819	1·4443489	·50154273	48
49	29·497	1·4697761	·45977839	27·534	1·4398779	·50157642	49
50	29·199	1·4653650	·45980927	27·258	1·4354972	·50161011	50

Sine of Inclina- tion (1 over)	$n = \cdot 013$			$n = \cdot 014$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	180-996	2-2576689	·54162258	171-044	2-2381068	·58828585	1
2	127-985	2-1071806	·54165907	120-948	2-0825990	·58832516	2
3	104-501	2-0191217	·54169557	98-755	1-9945605	·58836446	3
4	90-502	1-9566591	·54173207	95-526	1-9320983	·58840376	4
5	80-949	1-9082108	·54176857	76-498	1-8836504	·58844307	5
6	73-897	1-8686270	·54180506	69-834	1-8440669	·58848238	6
7	68-416	1-8351603	·54184156	64-655	1-8106006	·58852168	7
8	63-999	1-8061710	·54187806	60-480	1-7816118	·58856099	8
9	60-340	1-7806015	·54191456	57-022	1-7560426	·58860029	9
10	57-244	1-7577295	·54195105	54-097	1-7331710	·58863960	10
11	54-581	1-7370399	·54198755	51-580	1-7121418	·58867890	11
12	52-258	1-7181524	·54202405	49-385	1-6935946	·58871820	12
13	50-209	1-7007780	·54206055	47-448	1-6762207	·58875751	13
14	48-388	1-6846924	·54209704	45-723	1-6601355	·58879682	14
15	46-743	1-6697175	·54213354	44-178	1-6451611	·58883612	15
16	45-259	1-6557098	·54217004	42-771	1-6311538	·58887543	16
17	43-909	1-6425521	·54220654	41-495	1-6179964	·58891473	17
18	42-672	1-6301470	·54224303	40-327	1-6055917	·58895404	18
19	41-585	1-6184133	·54227953	39-251	1-5938584	·58899334	19
20	40-484	1-6072818	·54231603	38-258	1-5827273	·58403265	20
21	39-509	1-5966989	·54235253	37-337	1-5721398	·58407195	21
22	38-601	1-5865990	·54238902	36-479	1-5620452	·58411126	22
23	37-753	1-5769531	·54242552	35-678	1-5523997	·58415056	23
24	36-959	1-5677181	·54246202	34-927	1-5431652	·58418987	24
25	36-213	1-5588605	·54249852	34-222	1-5343079	·58422917	25
26	35-510	1-5503505	·54253501	33-558	1-5257983	·58426848	26
27	34-847	1-5421621	·54257151	32-931	1-5176103	·58430778	27
28	34-219	1-5342717	·54260801	32-339	1-5097203	·58434709	28
29	33-625	1-5266584	·54264451	31-777	1-5021074	·58438639	29
30	33-060	1-5193036	·54268100	31-243	1-4947580	·58442570	30
31	32-523	1-5121901	·54271750	30-735	1-4876399	·58446500	31
32	32-011	1-5053026	·54275400	30-252	1-4807528	·58450431	32
33	31-523	1-4986274	·54279050	29-791	1-4740779	·58454361	33
34	31-056	1-4921516	·54282699	29-350	1-4676025	·58458292	34
35	30-610	1-4858639	·54286349	28-928	1-4613152	·58462222	35
36	30-182	1-4797533	·54289999	28-524	1-4552050	·58466153	36
37	29-772	1-4738104	·54293649	28-136	1-4492625	·58470083	37
38	29-378	1-4680262	·54297298	27-764	1-4434787	·58474014	38
39	29-000	1-4623924	·54300948	27-406	1-4378453	·58477944	39
40	28-636	1-4569015	·54304598	27-062	1-4323548	·58481875	40
41	28-285	1-4515463	·54308248	26-730	1-4270000	·58485805	41
42	27-946	1-4463203	·54311897	26-410	1-4217744	·58489736	42
43	27-620	1-4412174	·54315547	26-102	1-4166719	·58493666	43
44	27-305	1-4362320	·54319197	25-804	1-4116869	·58497597	44
45	27-000	1-4313588	·54322847	25-516	1-4068141	·58501527	45
46	26-705	1-4265980	·54326496	25-238	1-4020487	·58505458	46
47	26-420	1-4219297	·54330146	24-968	1-3973858	·58509388	47
48	26-144	1-4173647	·54333796	24-707	1-3928212	·58513319	48
49	25-876	1-4128941	·54337446	24-454	1-3883509	·58517249	49
50	25-616	1-4085138	·54341095	24-208	1-3839710	·58521180	50

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	162.418	2.2106349	.62494913	148.212	2.1708828	.70827568	1
2	114.849	2.0601274	.62499124	104.804	2.0203760	.70832340	2
3	98.775	1.9720893	.62503335	85.578	1.9323386	.70837113	3
4	81.218	1.9096274	.62507546	74.110	1.8698774	.70841886	4
5	72.641	1.8611799	.62511758	66.288	1.8214306	.70846659	5
6	66.313	1.8215968	.62515969	60.513	1.7818483	.70851431	6
7	61.395	1.7881309	.62520180	56.025	1.7483831	.70856204	7
8	57.480	1.7591424	.62524391	52.408	1.7193954	.70860977	8
9	54.147	1.7385736	.62528603	49.411	1.6938273	.70865750	9
10	51.369	1.7107024	.62532814	46.877	1.6709568	.70870522	10
11	48.980	1.6900136	.62537025	44.696	1.6502688	.70875295	11
12	46.895	1.6711268	.62541236	42.794	1.6313827	.70880068	12
13	45.056	1.6537532	.62545448	41.116	1.6140098	.70884841	13
14	43.418	1.6376684	.62549659	39.621	1.5979257	.70889613	14
15	41.946	1.6226943	.62553870	38.278	1.5829528	.70894386	15
16	40.615	1.6086874	.62558081	37.063	1.5689462	.70899159	16
17	39.403	1.5955304	.62562293	35.957	1.5557899	.70903932	17
18	38.294	1.5831261	.62566504	34.945	1.5433863	.70908704	18
19	37.273	1.5713931	.62570715	34.014	1.5316540	.70913477	19
20	36.330	1.5602624	.62574926	33.153	1.5205240	.70918250	20
21	35.455	1.5496753	.62579138	32.354	1.5099377	.70923023	21
22	34.640	1.5395811	.62583349	31.611	1.4998442	.70927795	22
23	33.879	1.5299360	.62587560	30.916	1.4901999	.70932568	23
24	33.167	1.5207018	.62591771	30.267	1.4809664	.70937341	24
25	32.497	1.5118450	.62595983	29.655	1.4721102	.70942114	25
26	31.867	1.5033358	.62600194	29.080	1.4636017	.70946886	26
27	31.271	1.4951481	.62604405	28.537	1.4554147	.70951659	27
28	30.709	1.4872585	.62608616	28.024	1.4475259	.70956432	28
29	30.175	1.4796460	.62612828	27.537	1.4399141	.70961205	29
30	29.668	1.4722919	.62617039	27.075	1.4325607	.70965977	30
31	29.186	1.4651792	.62621250	26.635	1.4254487	.70970750	31
32	28.727	1.4582925	.62625461	26.216	1.4185627	.70975523	32
33	28.289	1.4516180	.62629673	25.816	1.4118890	.70980296	33
34	27.870	1.4451430	.62633884	25.434	1.4054147	.70985068	34
35	27.470	1.4388560	.62638095	25.069	1.3991284	.70989841	35
36	27.086	1.4327462	.62642306	24.719	1.3930193	.70994614	36
37	26.718	1.4268041	.62646518	24.383	1.3870779	.70999387	37
38	26.365	1.4210207	.62650729	24.060	1.3812953	.71004159	38
39	26.025	1.4153877	.62654940	23.750	1.3756630	.71008932	39
40	25.698	1.4098975	.62659151	23.452	1.3701735	.71013705	40
41	25.383	1.4045431	.62663363	23.165	1.3648198	.71018478	41
42	25.079	1.3993179	.62667574	22.888	1.3595953	.71023250	42
43	24.786	1.3942157	.62671785	22.620	1.3544939	.71028023	43
44	24.504	1.3892311	.62675996	22.362	1.3495100	.71032796	44
45	24.231	1.3843587	.62680208	22.112	1.3446338	.71037569	45
46	23.966	1.3795986	.62684419	21.870	1.3398739	.71042341	46
47	23.710	1.3749311	.62688630	21.638	1.3352122	.71047114	47
48	23.462	1.3703669	.62692841	21.412	1.3306487	.71051887	48
49	23.222	1.3658970	.62697053	21.193	1.3261795	.71056660	49
50	22.989	1.3615175	.62701264	20.980	1.3218007	.71061432	50

Sine of Inclina- tion (1 over)	$n = \cdot 020$			$n = \cdot 0225$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	132-229	2-1213284	·83326550	122-167	2-0869525	·93742369	1
2	98-502	1-9708226	·83332165	86-387	1-9364475	·93748686	2
3	76-346	1-8827862	·83337780	70-536	1-8484118	·93755008	3
4	66-119	1-8203260	·83343395	61-088	1-7859524	·93761320	4
5	59-140	1-7718802	·83349010	54-639	1-7375074	·93767636	5
6	53-988	1-7322989	·83354625	49-880	1-6979268	·93773953	6
7	49-984	1-6988847	·83360240	46-181	1-6644633	·93780270	7
8	46-757	1-6698479	·83365855	43-199	1-6354773	·93786587	8
9	44-084	1-6442808	·83371470	40-730	1-6099110	·93792904	9
10	41-823	1-6214114	·83377085	38-641	1-5870423	·93799221	10
11	39-877	1-6007243	·83382700	36-843	1-5663559	·93805538	11
12	38-180	1-5818392	·83388315	35-276	1-5474716	·93811855	12
13	36-683	1-5644674	·83393930	33-892	1-5301005	·93818172	13
14	35-350	1-5483843	·83399545	32-660	1-5140182	·93824488	14
15	34-152	1-5334119	·83405160	31-553	1-4990465	·93830805	15
16	33-068	1-5194067	·83410775	30-552	1-4850421	·93837122	16
17	32-081	1-5062514	·83416390	29-641	1-4718876	·93843439	17
18	31-178	1-4938488	·83422005	28-806	1-4594858	·93849756	18
19	30-347	1-4821175	·83427620	28-038	1-4477553	·93856073	19
20	29-579	1-4709885	·83433235	27-329	1-4366270	·93862390	20
21	28-867	1-4604032	·83438850	26-671	1-4260424	·93868706	21
22	28-204	1-4503107	·83444465	26-059	1-4159507	·93875023	22
23	27-584	1-4406673	·83450080	25-486	1-4063081	·93881340	23
24	27-004	1-4314348	·83455695	24-950	1-3970764	·93887657	24
25	26-459	1-4225796	·83461310	24-447	1-38862219	·93893974	25
26	25-946	1-4140721	·83466925	23-973	1-3797152	·93900291	26
27	25-461	1-4058862	·83472540	23-525	1-3715300	·93906608	27
28	25-003	1-3979983	·83478155	23-102	1-3636428	·93912925	28
29	24-569	1-3903875	·83483770	22-700	1-3560328	·93919241	29
30	24-156	1-3830351	·83489385	22-319	1-3486812	·93925558	30
31	23-764	1-3759241	·83495000	21-957	1-3415710	·93931875	31
32	23-390	1-3690390	·83500615	21-612	1-3346868	·93938192	32
33	23-034	1-3623664	·83506230	21-282	1-3280147	·93944509	33
34	22-693	1-3558931	·83511845	20-967	1-3215422	·93950826	34
35	22-367	1-3496078	·83517460	20-666	1-3152577	·93957143	35
36	22-054	1-3434997	·83523075	20-378	1-3091504	·93963460	36
37	21-755	1-3375593	·83528690	20-101	1-3032107	·93969776	37
38	21-468	1-3318076	·83534305	19-835	1-2974298	·93976093	38
39	21-191	1-3261463	·83539920	19-579	1-2917993	·93982410	39
40	20-925	1-3206578	·83545535	19-333	1-2863115	·93988727	40
41	20-668	1-3153052	·83551150	19-096	1-2809596	·93995044	41
42	20-421	1-3100817	·83556765	18-868	1-2757369	·94001361	42
43	20-183	1-3049812	·83562380	18-648	1-2706371	·94007678	43
44	19-953	1-2999933	·83567995	18-436	1-2656550	·94013995	44
45	19-730	1-2951276	·83573610	18-230	1-2607851	·94020311	45
46	19-515	1-2903642	·83579225	18-031	1-2560225	·94026628	46
47	19-307	1-2857035	·83584840	17-839	1-2513625	·94032945	47
48	19-105	1-2811410	·83590455	17-653	1-2468007	·94039262	48
49	18-909	1-2766728	·83596070	17-472	1-2423333	·94045579	49
50	18-720	1-2722950	·83601685	17-296	1-2379563	·94051896	50

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	114·116	2·0578475	1·0415819	107·580	2·0315281	1·1457401	1
2	80·694	1·9068433	1·0416521	76·037	1·8810245	1·1458173	2
3	65·888	1·8188084	1·0417223	62·086	1·7929902	1·1458945	3
4	57·062	1·7563496	1·0417924	53·769	1·7805322	1·1459717	4
5	51·039	1·7079053	1·0418626	48·093	1·6820885	1·1460489	5
6	46·598	1·6688253	1·0419328	43·904	1·6425092	1·1461261	6
7	43·138	1·6348626	1·0420030	40·649	1·6090470	1·1462033	7
8	40·853	1·6058773	1·0420732	38·024	1·5800625	1·1462805	8
9	38·046	1·5803117	1·0421434	35·850	1·5544975	1·1463577	9
10	36·095	1·5574437	1·0422136	34·012	1·5316302	1·1464349	10
11	34·415	1·5367581	1·0422838	32·430	1·5109452	1·1465121	11
12	32·951	1·5178744	1·0423539	31·050	1·4920622	1·1465893	12
13	31·659	1·5005040	1·0424241	29·833	1·4746925	1·1466665	13
14	30·509	1·4844224	1·0424943	28·748	1·4586115	1·1467437	14
15	29·475	1·4694515	1·0425645	27·774	1·4436412	1·1468210	15
16	28·539	1·4554478	1·0426347	26·893	1·4296382	1·1468982	16
17	27·688	1·4422940	1·0427049	26·090	1·4164850	1·1469754	17
18	26·909	1·4298929	1·0427751	25·356	1·4040846	1·1470526	18
19	26·192	1·4181630	1·0428453	24·680	1·3923554	1·1471298	19
20	25·529	1·4070355	1·0429154	24·056	1·3812286	1·1472070	20
21	24·915	1·3964516	1·0429856	23·477	1·3706453	1·1472842	21
22	24·342	1·3863605	1·0430558	22·938	1·3605549	1·1473614	22
23	23·807	1·3767186	1·0431260	22·434	1·3509136	1·1474386	23
24	23·307	1·3674876	1·0431962	21·962	1·3416833	1·1475158	24
25	22·837	1·3586839	1·0432664	21·519	1·3328302	1·1475930	25
26	22·394	1·3501279	1·0433366	21·102	1·3243248	1·1476702	26
27	21·976	1·3419434	1·0434068	20·708	1·3161409	1·1477474	27
28	21·580	1·3340569	1·0434769	20·335	1·3082552	1·1478246	28
29	21·205	1·3264476	1·0435471	19·982	1·3006465	1·1479018	29
30	20·850	1·3190967	1·0436173	19·647	1·2932963	1·1479790	30
31	20·511	1·3119872	1·0436875	19·328	1·2861874	1·1480563	31
32	20·188	1·3051036	1·0437577	19·024	1·2793045	1·1481335	32
33	19·881	1·2984323	1·0438279	18·734	1·2726338	1·1482107	33
34	19·587	1·2919605	1·0438981	18·457	1·2661627	1·1482879	34
35	19·305	1·2856766	1·0439693	18·191	1·2598795	1·1483651	35
36	19·035	1·2795700	1·0440384	17·938	1·2537735	1·1484423	36
37	18·777	1·2736311	1·0441086	17·694	1·2478353	1·1485195	37
38	18·529	1·2678509	1·0441788	17·460	1·2420557	1·1485967	38
39	18·290	1·2622211	1·0442490	17·236	1·2364265	1·1486739	39
40	18·061	1·2567340	1·0443192	17·019	1·2309402	1·1487511	40
41	17·840	1·2513828	1·0443894	16·811	1·2255896	1·1488283	41
42	17·626	1·2461608	1·0444596	16·610	1·2203682	1·1489055	42
43	17·420	1·2410618	1·0445298	16·416	1·2152698	1·1489827	43
44	17·222	1·2360808	1·0445999	16·229	1·2102890	1·1490599	44
45	17·030	1·2312111	1·0446701	16·048	1·2054204	1·1491371	45
46	16·844	1·2264492	1·0447403	15·873	1·2006592	1·1492143	46
47	16·664	1·2217898	1·0448105	15·704	1·1960005	1·1492916	47
48	16·490	1·2172288	1·0448807	15·540	1·1914401	1·1493688	48
49	16·322	1·2127621	1·0449509	15·381	1·1869740	1·1494460	49
50	16·158	1·2083857	1·0450211	15·226	1·1825984	1·1495232	50

Sine of Inclina- tion (1 over)	$n = \cdot 030$			$n = \cdot 035$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1	102·041	2·0087737	1·2498988	98·415	1·9704185	1·4582146	1
2	72·156	1·8582707	1·2499825	66·057	1·8199166	1·4583129	2
3	58·916	1·7702370	1·2500667	58·937	1·7318840	1·4584112	3
4	51·024	1·7077796	1·2501509	46·712	1·6694277	1·4585094	4
5	45·639	1·6593365	1·2502352	41·782	1·6209857	1·4586077	5
6	41·663	1·6197579	1·2503194	38·142	1·5814081	1·4587059	6
7	38·574	1·5862965	1·2504036	35·314	1·5479478	1·4588042	7
8	36·084	1·5573124	1·2504878	33·034	1·5189649	1·4589025	8
9	34·021	1·5317480	1·2505721	31·146	1·4984016	1·4590007	9
10	32·276	1·5088812	1·2506563	29·549	1·4705360	1·4590990	10
11	30·775	1·4881969	1·2507405	28·174	1·4498527	1·4591973	11
12	29·466	1·4693146	1·2508247	26·976	1·4309715	1·4592955	12
13	28·310	1·4519454	1·2509090	25·918	1·4136034	1·4593938	13
14	27·281	1·4358651	1·2509932	24·976	1·3975242	1·4594920	14
15	26·357	1·4208954	1·2510774	24·130	1·3825556	1·4595903	15
16	25·520	1·4068929	1·2511616	23·364	1·3685542	1·4596886	16
17	24·759	1·3937404	1·2512459	22·667	1·3554028	1·4597868	17
18	24·062	1·3813405	1·2513301	22·029	1·3430040	1·4598851	18
19	23·421	1·3696120	1·2514143	21·443	1·3312766	1·4599834	19
20	22·829	1·3584857	1·2514985	20·900	1·3201514	1·4600816	20
21	22·279	1·3479030	1·2515828	20·397	1·3095699	1·4601799	21
22	21·768	1·3378133	1·2516670	19·929	1·2994812	1·4602781	22
23	21·290	1·3281726	1·2517512	19·491	1·2988417	1·4603764	23
24	20·842	1·3189429	1·2518354	19·082	1·2806130	1·4604747	24
25	20·422	1·3100904	1·2519197	18·697	1·2717616	1·4605729	25
26	20·026	1·3015856	1·2520039	18·334	1·2632580	1·4606712	26
27	19·652	1·2934024	1·2520881	17·992	1·2550758	1·4607695	27
28	19·298	1·2855172	1·2521723	17·668	1·2471918	1·4608677	28
29	18·963	1·2779092	1·2522566	17·361	1·2395848	1·4609660	29
30	18·645	1·2705595	1·2523408	17·070	1·2322368	1·4610642	30
31	18·342	1·2634513	1·2524250	16·793	1·2251291	1·4611625	31
32	18·054	1·2565690	1·2525092	16·529	1·2182479	1·4612608	32
33	17·779	1·2498989	1·2525935	16·277	1·2115790	1·4613590	33
34	17·516	1·2434284	1·2526777	16·037	1·2051059	1·4614573	34
35	17·264	1·2371458	1·2527619	15·806	1·1988281	1·4615556	35
36	17·022	1·2310405	1·2528461	15·586	1·1927238	1·4616538	36
37	16·792	1·2251028	1·2529304	15·374	1·1867872	1·4617521	37
38	16·570	1·2193238	1·2530146	15·171	1·1810094	1·4618503	38
39	16·357	1·2136953	1·2530988	14·976	1·1753819	1·4619486	39
40	16·151	1·2082095	1·2531830	14·788	1·1698972	1·4620469	40
41	15·953	1·2028596	1·2532673	14·607	1·1645483	1·4621541	41
42	15·763	1·1976388	1·2533515	14·432	1·1593287	1·4622434	42
43	15·579	1·1925410	1·2534357	14·264	1·1542321	1·4623417	43
44	15·402	1·1875609	1·2535199	14·101	1·1492530	1·4624399	44
45	15·230	1·1826929	1·2536042	13·944	1·1443861	1·4625382	45
46	15·064	1·1779322	1·2536884	13·792	1·1396266	1·4626364	46
47	14·903	1·1732742	1·2537726	13·645	1·1349696	1·4627347	47
48	14·747	1·1687144	1·2538568	13·502	1·1304110	1·4628330	48
49	14·596	1·1642489	1·2539411	13·364	1·1259466	1·4629312	49
50	14·450	1·1598738	1·2540253	13·230	1·1215726	1·4630295	50

Sine of Inclina- tion (1 over)	n = .050			Sine of Inclina- tion (1 over)	n = .009		
	N	log. N	D		N	log. N	D
1	77.890	1.8914904	2.0831688	51	34.086	1.5319319	.37623285
2	55.079	1.7409811	2.0838041	52	33.707	1.5277208	.37625812
3	44.973	1.6529512	2.0834445	53	33.388	1.5235890	.37628339
4	38.949	1.5904974	2.0835849	54	33.077	1.5195351	.37630865
5	34.888	1.5420580	2.0837253	55	32.776	1.5155557	.37633392
6	31.804	1.5024831	2.0838656	56	32.482	1.5116480	.37635919
7	29.446	1.4690254	2.0840060	57	32.196	1.5078095	.37638446
8	27.545	1.4400450	2.0841464	58	31.919	1.5040379	.37640972
9	25.971	1.4144844	2.0842868	59	31.647	1.5003809	.37643499
10	24.639	1.3916213	2.0844271	60	31.382	1.4966868	.37646026
11	23.493	1.3709407	2.0845675	61	31.125	1.4931022	.37648558
12	22.494	1.3520620	2.0847079	62	30.873	1.4895763	.37651079
13	21.612	1.3346965	2.0848483	63	30.627	1.4861069	.37653606
14	20.827	1.3186199	2.0849886	64	30.387	1.4826922	.37656133
15	20.121	1.3036540	2.0851290	65	30.153	1.4793806	.37658660
16	19.483	1.2896552	2.0852694	66	29.924	1.4760208	.37661186
17	18.902	1.2765063	2.0854098	67	29.700	1.4727598	.37663713
18	18.370	1.2641102	2.0855501	68	29.481	1.4695477	.37666240
19	17.881	1.2523853	2.0856905	69	29.267	1.4663827	.37668767
20	17.429	1.2412628	2.0858309	70	29.058	1.4632633	.37671293
21	17.009	1.2306888	2.0859713	71	28.853	1.4601882	.37673820
22	16.619	1.2205977	2.0861116	72	28.652	1.4571561	.37676347
23	16.255	1.2109608	2.0862520	73	28.455	1.4541659	.37678874
24	15.912	1.2017347	2.0863924	74	28.263	1.4512164	.37681400
25	15.591	1.1928860	2.0865328	75	28.074	1.4483067	.37683927
26	15.289	1.1843849	2.0866731	76	27.889	1.4454355	.37686454
27	15.004	1.1762053	2.0868135	77	27.708	1.4426019	.37688981
28	14.734	1.1683239	2.0869539	78	27.530	1.4398050	.37691507
29	14.478	1.1607196	2.0870943	79	27.355	1.4370437	.37694034
30	14.236	1.1533736	2.0872346	80	27.184	1.4343173	.37696561
31	14.005	1.1462690	2.0873750	81	27.016	1.4316249	.37699088
32	13.785	1.1393904	2.0875154	82	26.851	1.4289656	.37701614
33	13.575	1.1327241	2.0876558	83	26.689	1.4263385	.37704141
34	13.374	1.1262572	2.0877961	84	26.530	1.4237429	.37706668
35	13.182	1.1199784	2.0879365	85	26.374	1.4211781	.37709195
36	12.998	1.1138767	2.0880769	86	26.221	1.4186433	.37711721
37	12.822	1.1079427	2.0882173	87	26.070	1.4161380	.37714248
38	12.652	1.1021675	2.0883576	88	25.922	1.4136618	.37716775
39	12.489	1.0965426	2.0884980	89	25.776	1.4112126	.37719302
40	12.333	1.0910605	2.0886384	90	25.633	1.4087913	.37721828
41	12.182	1.0857142	2.0887788	91	25.492	1.4063969	.37724355
42	12.036	1.0804972	2.0889191	92	25.353	1.4040287	.37726882
43	11.896	1.0754031	2.0890595	93	25.217	1.4016862	.37729409
44	11.761	1.0704266	2.0891999	94	25.082	1.3993687	.37731935
45	11.630	1.0655624	2.0893403	95	24.950	1.3970759	.37734462
46	11.503	1.0608054	2.0894806	96	24.820	1.3948071	.37736989
47	11.380	1.0561511	2.0896210	97	24.692	1.3925618	.37739516
48	11.262	1.0515950	2.0897614	98	24.566	1.3903397	.37742042
49	11.146	1.0471332	2.0899018	99	24.442	1.3881401	.37744569
50	11.035	1.0427618	2.0900421	100	24.320	1.3859627	.37747096

Sine of Inclination (1 over)	$n = \cdot 010$			$n = \cdot 011$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
51	31·217	1·4943953	·41808650	28·912	1·4610709	·45984015	51
52	30·916	1·4901842	·41806458	28·633	1·4568602	·45987103	52
53	30·623	1·4860534	·41809265	28·361	1·4527298	·45990192	53
54	30·339	1·4820000	·41812073	28·098	1·4486768	·45993280	54
55	30·062	1·4780210	·41814880	27·841	1·4446983	·45996368	55
56	29·798	1·4741138	·41817688	27·593	1·4407915	·45999456	56
57	29·531	1·4702758	·41820495	27·350	1·4369539	·46002545	57
58	29·277	1·4665047	·41823303	27·113	1·4331832	·46005633	58
59	29·027	1·4627981	·41826110	26·883	1·4294771	·46008721	59
60	28·784	1·4591540	·41828918	26·658	1·4258334	·46011809	60
61	28·548	1·4555701	·41831725	26·439	1·4222500	·46014898	61
62	28·317	1·4520447	·41834533	26·225	1·4187250	·46017986	62
63	28·092	1·4485757	·41837340	26·017	1·4152565	·46021074	63
64	27·872	1·4451615	·41840148	25·813	1·4118428	·46024162	64
65	27·657	1·4418003	·41842955	25·614	1·4084320	·46027251	65
66	27·447	1·4384905	·41845763	25·420	1·4051726	·46030339	66
67	27·242	1·4352304	·41848570	25·230	1·4019130	·46033427	67
68	27·041	1·4320188	·41851378	25·044	1·3987018	·46036515	68
69	26·845	1·4288543	·41854185	24·862	1·3955377	·46039604	69
70	26·652	1·4257354	·41856993	24·684	1·3924192	·46042692	70
71	26·464	1·4226607	·41859800	24·510	1·3893449	·46045780	71
72	26·280	1·4196291	·41862608	24·340	1·3863137	·46048868	72
73	26·100	1·4166394	·41865415	24·172	1·3833244	·46051957	73
74	25·923	1·4136903	·41868223	24·009	1·3803758	·46055045	74
75	25·750	1·4107811	·41871030	23·849	1·3774671	·46058133	75
76	25·581	1·4079103	·41873838	23·692	1·3745969	·46061221	76
77	25·414	1·4050772	·41876645	23·538	1·3717642	·46064310	77
78	25·251	1·4022808	·41879453	23·386	1·3689682	·46067398	78
79	25·091	1·3995200	·41882260	23·239	1·3662078	·46070486	79
80	24·934	1·3967940	·41885068	23·093	1·3634822	·46073574	80
81	24·780	1·3941020	·41887875	22·950	1·3607906	·46076663	81
82	24·629	1·3914480	·41890683	22·811	1·3581321	·46079751	82
83	24·480	1·3888164	·41893490	22·673	1·3555059	·46082839	83
84	24·334	1·3862213	·41896298	22·538	1·3529112	·46085927	84
85	24·191	1·3836570	·41899105	22·405	1·3503473	·46089016	85
86	24·050	1·3811226	·41901913	22·275	1·3478134	·46092104	86
87	23·912	1·3786177	·41904720	22·147	1·3453089	·46095192	87
88	23·776	1·3761415	·41907528	22·021	1·3428331	·46098280	88
89	23·642	1·3736932	·41910335	21·897	1·3403854	·46101369	89
90	23·511	1·3712724	·41913143	21·775	1·3379650	·46104457	90
91	23·381	1·3688784	·41915950	21·656	1·3355714	·46107545	91
92	23·255	1·3665107	·41918758	21·538	1·3332041	·46110633	92
93	23·129	1·3641686	·41921565	21·422	1·3308624	·46113722	93
94	23·006	1·3618515	·41924373	21·308	1·3285458	·46116810	94
95	22·885	1·3595592	·41927180	21·196	1·3262539	·46119898	95
96	22·766	1·3572909	·41929988	21·085	1·3239860	·46122976	96
97	22·649	1·3550461	·41932795	20·977	1·3217416	·46126065	97
98	22·533	1·3528244	·41935603	20·870	1·3195204	·46129153	98
99	22·419	1·3506253	·41938410	20·764	1·3173217	·46132241	99
100	22·307	1·3484483	·41941218	20·661	1·3151452	·46135329	100

Sine of Inclina- tion (1 over)	n = .012			n = .013			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	26·990	1·4312035	·50164380	25·364	1·4042205	·54344745	51
52	26·730	1·4269932	·50167749	25·120	1·4000106	·54348395	52
53	26·477	1·4228632	·50171118	24·882	1·3958810	·54352045	53
54	26·231	1·4188106	·50174487	24·651	1·3918288	·54355694	54
55	25·992	1·4148325	·50177856	24·426	1·3878511	·54359344	55
56	25·759	1·4109261	·50181225	24·207	1·3839452	·54362994	56
57	25·532	1·4070889	·50184594	23·994	1·3801084	·54366644	57
58	25·312	1·4033187	·50187963	23·787	1·3763385	·54370293	58
59	25·096	1·3996130	·50191332	23·585	1·3726333	·54373943	59
60	24·887	1·3959697	·50194701	23·388	1·3689904	·54377593	60
61	24·682	1·3923867	·50198070	23·196	1·3654079	·54381243	61
62	24·483	1·3888621	·50201439	23·008	1·3618837	·54384892	62
63	24·288	1·3853941	·50204808	22·825	1·3584160	·54388542	63
64	24·098	1·3819808	·50208177	22·647	1·3550031	·54392192	64
65	23·912	1·3786204	·50211546	22·472	1·3516431	·54395842	65
66	23·731	1·3753114	·50214915	22·302	1·3483345	·54399491	66
67	23·554	1·3720522	·50218284	22·135	1·3450757	·54403141	67
68	23·380	1·3688414	·50221653	21·972	1·3418653	·54406791	68
69	23·210	1·3656778	·50225022	21·812	1·3387020	·54410441	69
70	23·044	1·3625596	·50228391	21·656	1·3355844	·54414090	70
71	22·882	1·3594859	·50231760	21·504	1·3325110	·54417740	71
72	22·722	1·3564552	·50235129	21·354	1·3294807	·54421390	72
73	22·566	1·3534663	·50238498	21·208	1·3264922	·54425040	73
74	22·414	1·3505181	·50241867	21·064	1·3235444	·54428690	74
75	22·264	1·3476097	·50245236	20·924	1·3206365	·54432340	75
76	22·118	1·3447399	·50248605	20·786	1·3177670	·54435989	76
77	21·974	1·3419076	·50251974	20·651	1·3149352	·54439639	77
78	21·833	1·3391120	·50255343	20·518	1·3121400	·54443288	78
79	21·695	1·3363521	·50258712	20·388	1·3093805	·54446938	79
80	21·559	1·3336269	·50262081	20·261	1·3066557	·54450588	80
81	21·426	1·3309358	·50265450	20·135	1·3039649	·54454238	81
82	21·295	1·3282777	·50268819	20·013	1·3013072	·54457887	82
83	21·167	1·3256519	·50272188	19·892	1·2986819	·54461537	83
84	21·041	1·3230576	·50275557	19·774	1·2960880	·54465187	84
85	20·917	1·3204941	·50278926	19·657	1·2935250	·54468837	85
86	20·795	1·3179607	·50282295	19·543	1·2909919	·54472586	86
87	20·675	1·3154566	·50285664	19·431	1·2884882	·54476236	87
88	20·558	1·3129812	·50289033	19·320	1·2860132	·54479886	88
89	20·443	1·3105338	·50292402	19·211	1·2835662	·54483536	89
90	20·329	1·3081138	·50295771	19·105	1·2811467	·54487185	90
91	20·217	1·3057207	·50299140	19·000	1·2787540	·54490835	91
92	20·107	1·3033539	·50302509	18·896	1·2763875	·54494485	92
93	19·999	1·3010127	·50305878	18·795	1·2740467	·54498135	93
94	19·893	1·2986965	·50309247	18·695	1·2717309	·54501784	94
95	19·788	1·2964050	·50312616	18·597	1·2694398	·54505434	95
96	19·685	1·2941375	·50315985	18·500	1·2671728	·54509084	96
97	19·583	1·2918935	·50319354	18·405	1·2649292	·54512734	97
98	19·483	1·2896728	·50322723	18·311	1·2627088	·54516383	98
99	19·385	1·2874745	·50326092	18·218	1·2605109	·54520033	99
100	19·289	1·2852984	·50329461	18·127	1·2583352	·54523583	100

Sine of Inclina- tion (1 over)	$n = \cdot 014$			$n = \cdot 015$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	28-982	1-8796781	58525110	22-768	1-8572249	62705475	51
52	28-740	1-8754686	58529041	22-543	1-8530158	62709686	52
53	28-515	1-8713394	58532971	22-330	1-8488870	62713898	53
54	28-296	1-8672876	58536902	22-123	1-8448356	62718109	54
55	28-084	1-8633103	58540832	21-921	1-8408587	62722320	55
56	22-878	1-8594048	58544763	21-725	1-8369535	62726531	56
57	22-676	1-8555684	58548693	21-534	1-8331175	62730743	57
58	22-480	1-8517989	58552624	21-352	1-8294484	62734954	58
59	22-289	1-8480940	58556554	21-171	1-8257439	62739165	59
60	22-103	1-8444515	58560485	20-995	1-8221018	62743376	60
61	21-921	1-8408694	58564415	20-822	1-8185200	62747588	61
62	21-745	1-8373456	58568346	20-653	1-8149966	62751799	62
63	21-571	1-8338783	58572276	20-485	1-8114297	62756010	63
64	21-402	1-8304657	58576207	20-324	1-8080175	62760221	64
65	21-238	1-8271061	58580137	20-167	1-8046583	62764433	65
66	21-076	1-8237979	58584068	20-015	1-8013505	62768644	66
67	20-919	1-8205396	58587998	19-865	1-2980925	62772855	67
68	20-765	1-8173296	58591929	19-719	1-2948829	62777066	68
69	20-614	1-8141667	58595859	19-576	1-2917204	62781278	69
70	20-467	1-8110494	58599790	19-436	1-2886035	62785489	70
71	20-323	1-8079765	58603720	19-299	1-2855309	62789700	71
72	20-181	1-8049465	58607650	19-165	1-2825013	62793911	72
73	20-043	1-8019584	58611581	19-033	1-2795136	62798123	73
74	19-907	1-2990110	58615512	18-905	1-2765666	62802334	74
75	19-774	1-2961035	58619442	18-778	1-2736594	62806545	75
76	19-644	1-2932344	58623373	18-655	1-2707907	62810756	76
77	19-517	1-2904029	58627303	18-534	1-2679596	62814968	77
78	19-391	1-2876081	58631234	18-415	1-2651652	62819179	78
79	19-269	1-2848490	58635164	18-298	1-2624065	62823390	79
80	19-148	1-2821247	58639095	18-184	1-2596825	62827601	80
81	19-030	1-2794343	58643025	18-072	1-2569925	62831813	81
82	18-914	1-2767770	58646955	17-961	1-2543356	62836024	82
83	18-800	1-2741520	58650886	17-853	1-2517110	62840235	83
84	18-688	1-2715585	58654817	17-747	1-2491179	62844446	84
85	18-578	1-2689959	58658747	17-642	1-2465556	62848658	85
86	18-470	1-2664632	58662678	17-540	1-2440233	62852869	86
87	18-364	1-2639599	58666608	17-439	1-2415204	62857080	87
88	18-260	1-2614853	58670539	17-340	1-2390462	62861291	88
89	18-157	1-2590387	58674469	17-243	1-2366000	62865503	89
90	18-056	1-2566195	58678400	17-147	1-2341812	62869714	90
91	17-957	1-2542272	58682330	17-053	1-2317898	62873925	91
92	17-859	1-2518611	58686261	16-960	1-2294236	62878136	92
93	17-763	1-2495207	58690191	16-869	1-2270835	62882348	93
94	17-669	1-2472053	58694122	16-779	1-2247685	62886559	94
95	17-576	1-2449146	58698052	16-691	1-2224732	62890770	95
96	17-484	1-2426479	58701983	16-604	1-2202119	62894981	96
97	17-394	1-2404047	58705913	16-519	1-2179691	62899193	97
98	17-306	1-2381847	58709844	16-434	1-2157495	62903404	98
99	17-218	1-2359873	58713774	16-351	1-2135524	62907615	99
100	17-132	1-2338120	58717705	16-270	1-2113775	62911826	100

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	20·774	1·8175088	·71066205	18·586	1·2680041	·88607800	51
52	20·574	1·8133005	·71070978	18·357	1·2637967	·88612915	52
53	20·378	1·8091724	·71075751	18·183	1·2596696	·88618530	53
54	20·189	1·8051217	·71080523	18·014	1·2556199	·88624145	54
55	20·005	1·8011455	·71085296	17·850	1·2516447	·88629760	55
56	19·826	1·2972410	·71090069	17·691	1·2477412	·88635375	56
57	19·652	1·2934058	·71094842	17·535	1·2439069	·88640990	57
58	19·482	1·2896374	·71099614	17·384	1·2401396	·88646605	58
59	19·317	1·2859336	·71104387	17·236	1·2364367	·88652220	59
60	19·156	1·2822922	·71109160	17·092	1·2327964	·88657835	60
61	18·998	1·2787111	·71113933	16·952	1·2292163	·88663450	61
62	18·845	1·2751884	·71118705	16·815	1·2256946	·88669065	62
63	18·695	1·2717222	·71123478	16·681	1·2222294	·88674680	63
64	18·549	1·2683107	·71128251	16·551	1·2188189	·88680295	64
65	18·406	1·2649523	·71133024	16·423	1·2154614	·88685910	65
66	18·266	1·2616452	·71137796	16·299	1·2121553	·88691525	66
67	18·130	1·2583879	·71142569	16·177	1·2088991	·88697140	67
68	17·996	1·2551790	·71147342	16·058	1·2056911	·88702755	68
69	17·866	1·2520173	·71152115	15·942	1·2025304	·88708370	69
70	17·738	1·2489011	·71156887	15·828	1·1994151	·88713985	70
71	17·613	1·2458292	·71161660	15·716	1·1963443	·88719600	71
72	17·491	1·2428003	·71166433	15·607	1·1933164	·88725215	72
73	17·371	1·2398133	·71171206	15·500	1·1903304	·88730830	73
74	17·253	1·2368670	·71175978	15·395	1·1873851	·88736445	74
75	17·138	1·2339605	·71180751	15·293	1·1844796	·88742060	75
76	17·025	1·2310926	·71185524	15·192	1·1816126	·88747675	76
77	16·915	1·2282622	·71190297	15·093	1·1787832	·88753290	77
78	16·806	1·2254685	·71195069	14·997	1·1759905	·88758905	78
79	16·700	1·2227105	·71199842	14·902	1·1732335	·88764520	79
80	16·595	1·2199872	·71204615	14·809	1·1705112	·88770135	80
81	16·493	1·2172979	·71209388	14·717	1·1678229	·88775750	81
82	16·392	1·2146417	·71214160	14·627	1·1651677	·88781365	82
83	16·294	1·2120179	·71218933	14·539	1·1625448	·88786980	83
84	16·197	1·2094255	·71223706	14·453	1·1599534	·88792595	84
85	16·101	1·2068639	·71228479	14·368	1·1573928	·88798210	85
86	16·008	1·2043323	·71233251	14·284	1·1548622	·88803825	86
87	15·916	1·2018301	·71238024	14·202	1·1523610	·88809440	87
88	15·826	1·1993576	·71242797	14·122	1·1498885	·88815055	88
89	15·737	1·1969111	·71247570	14·043	1·1474440	·88820670	89
90	15·649	1·1944930	·71252342	13·965	1·1450269	·88826285	90
91	15·563	1·1921019	·71257115	13·888	1·1426368	·88831900	91
92	15·479	1·1897369	·71261888	13·813	1·1402728	·88837515	92
93	15·396	1·1873975	·71266661	13·738	1·1379344	·88843130	93
94	15·314	1·1850832	·71271433	13·665	1·1356211	·88848745	94
95	15·233	1·1827936	·71276206	13·594	1·1333325	·88854360	95
96	15·154	1·1805280	·71280979	13·523	1·1310679	·88859975	96
97	15·076	1·1782859	·71285752	13·453	1·1288268	·88865590	97
98	14·999	1·1760671	·71290524	13·385	1·1266089	·88871205	98
99	14·924	1·1738707	·71295297	13·317	1·1244135	·88876820	99
100	14·849	1·1716965	·71300070	13·251	1·1222403	·88882435	100

Sine of Inclina- tion (1 over)	$n = \cdot 0225$			$n = \cdot 0250$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	17·126	1·2336661	·94058218	15·999	1·2040963	1·0450913	51
52	16·961	1·2294595	·94064530	15·845	1·1998904	1·0451614	52
53	16·801	1·2253331	·94070846	15·695	1·1957648	1·0452316	53
54	16·645	1·2212842	·94077163	15·550	1·1917165	1·0453018	54
55	16·493	1·2173098	·94083480	15·408	1·1877428	1·0453720	55
56	16·346	1·2134070	·94089797	15·270	1·1838408	1·0454422	56
57	16·202	1·2095735	·94096114	15·136	1·1800079	1·0455124	57
58	16·062	1·2058069	·94102431	15·005	1·1762420	1·0455826	58
59	15·926	1·2021048	·94108748	14·878	1·1725407	1·0456528	59
60	15·793	1·1984652	·94115065	14·754	1·1689017	1·0457229	60
61	15·663	1·1948859	·94121381	14·633	1·1653231	1·0457931	61
62	15·537	1·1913650	·94127698	14·515	1·1618029	1·0458633	62
63	15·414	1·1879005	·94134015	14·399	1·1583391	1·0459335	63
64	15·293	1·1844908	·94140332	14·287	1·1549301	1·0460037	64
65	15·175	1·1811341	·94146649	14·177	1·1515741	1·0460739	65
66	15·060	1·1778287	·94152966	14·069	1·1482694	1·0461441	66
67	14·948	1·1745732	·94159283	13·964	1·1450146	1·0462143	67
68	14·838	1·1713660	·94165600	13·861	1·1418082	1·0462844	68
69	14·730	1·1682060	·94171916	13·761	1·1386489	1·0463546	69
70	14·625	1·1650916	·94178233	13·663	1·1355351	1·0464248	70
71	14·522	1·1620214	·94184550	13·566	1·1324657	1·0464950	71
72	14·421	1·1589943	·94190867	13·472	1·1294392	1·0465652	72
73	14·322	1·1460091	·94197184	13·380	1·1264547	1·0466354	73
74	14·225	1·1530645	·94203501	13·290	1·1235109	1·0467056	74
75	14·131	1·1501598	·94209818	13·201	1·1206069	1·0467758	75
76	14·038	1·1472936	·94216135	13·114	1·1177413	1·0468459	76
77	13·947	1·1444649	·94222451	13·029	1·1149134	1·0469161	77
78	13·857	1·1416730	·94228768	12·946	1·1121222	1·0469863	78
79	13·769	1·1389167	·94235085	12·864	1·1093666	1·0470565	79
80	13·683	1·1361952	·94241402	12·783	1·1066458	1·0471267	80
81	13·599	1·1335077	·94247719	12·705	1·1039590	1·0471969	81
82	13·516	1·1308531	·94254036	12·627	1·1013052	1·0472671	82
83	13·435	1·1282311	·94260353	12·551	1·0986838	1·0473373	83
84	13·355	1·1256405	·94266670	12·477	1·0960939	1·0474074	84
85	13·276	1·1230806	·94272986	12·403	1·0935347	1·0474776	85
86	13·199	1·1205508	·94279303	12·331	1·0910056	1·0475478	86
87	13·124	1·1180503	·94285620	12·261	1·0885059	1·0476180	87
88	13·049	1·1155786	·94291937	12·191	1·0860348	1·0476882	88
89	12·976	1·1131349	·94298254	12·123	1·0835917	1·0477584	89
90	12·904	1·1107185	·94304571	12·055	1·0811761	1·0478286	90
91	12·833	1·1083291	·94310888	11·989	1·0787874	1·0478988	91
92	12·763	1·1059659	·94317215	11·924	1·0764248	1·0479689	92
93	12·695	1·1036282	·94323521	11·860	1·0740879	1·0480391	93
94	12·628	1·1013157	·94329838	11·797	1·0717761	1·0481093	94
95	12·561	1·0990278	·94336155	11·735	1·0694889	1·0481795	95
96	12·496	1·0967640	·94342472	11·674	1·0672258	1·0482497	96
97	12·432	1·0945236	·94348789	11·614	1·0649862	1·0483199	97
98	12·368	1·0923065	·94355106	11·555	1·0627697	1·0483901	98
99	12·306	1·0901119	·94361423	11·497	1·0605758	1·0484603	99
100	12·245	1·0879394	·94367740	11·440	1·0584040	1·0485304	100

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	15.112	1.1783096	1.1496004	14.808	1.1555857	1.2541095	51
52	14.982	1.1741048	1.1496776	14.170	1.1513810	1.2541987	52
53	14.790	1.1699794	1.1497548	14.036	1.1472566	1.2542780	53
54	14.653	1.1659818	1.1498320	13.906	1.1432097	1.2543622	54
55	14.520	1.1619587	1.1499092	13.780	1.1392372	1.2544464	55
56	14.390	1.1580574	1.1499864	13.656	1.1353365	1.2545306	56
57	14.264	1.1542252	1.1500636	13.536	1.1315049	1.2546149	57
58	14.140	1.1504599	1.1501408	13.420	1.1277402	1.2546991	58
59	14.020	1.1467592	1.1502180	13.306	1.1240401	1.2547833	59
60	13.903	1.1431209	1.1502952	13.195	1.1204024	1.2548675	60
61	13.789	1.1395429	1.1503724	13.087	1.1168251	1.2549518	61
62	13.678	1.1360233	1.1504496	12.981	1.1133061	1.2550360	62
63	13.569	1.1325603	1.1505269	12.878	1.1098436	1.2551202	63
64	13.463	1.1291519	1.1506041	12.777	1.1064359	1.2552044	64
65	13.360	1.1257965	1.1506813	12.679	1.1030811	1.2552887	65
66	13.258	1.1224926	1.1507585	12.583	1.0997778	1.2553729	66
67	13.160	1.1192384	1.1508357	12.489	1.0965242	1.2554571	67
68	13.063	1.1160326	1.1509129	12.397	1.0933190	1.2555413	68
69	12.968	1.1128739	1.1509901	12.307	1.0901609	1.2556256	69
70	12.875	1.1097608	1.1510673	12.219	1.0870484	1.2557098	70
71	12.785	1.1066920	1.1511445	12.133	1.0839802	1.2557940	71
72	12.696	1.1036662	1.1512217	12.049	1.0809550	1.2558782	72
73	12.609	1.1006824	1.1512989	11.967	1.0779717	1.2559625	73
74	12.524	1.0977392	1.1513761	11.886	1.0750292	1.2560467	74
75	12.440	1.0948358	1.1514533	11.807	1.0721264	1.2561309	75
76	12.359	1.0919710	1.1515305	11.729	1.0692622	1.2562151	76
77	12.279	1.0891437	1.1516077	11.653	1.0664355	1.2562994	77
78	12.200	1.0863531	1.1516849	11.578	1.0636455	1.2563836	78
79	12.123	1.0835982	1.1517622	11.505	1.0608913	1.2564678	79
80	12.047	1.0808780	1.1518394	11.433	1.0581717	1.2565520	80
81	11.973	1.0781918	1.1519166	11.363	1.0554861	1.2566363	81
82	11.900	1.0755387	1.1519938	11.294	1.0528336	1.2567205	82
83	11.828	1.0729180	1.1520710	11.226	1.0502134	1.2568047	83
84	11.758	1.0703287	1.1521482	11.159	1.0476247	1.2568889	84
85	11.689	1.0677702	1.1522254	11.094	1.0450669	1.2569732	85
86	11.621	1.0652417	1.1523026	11.029	1.0425390	1.2570574	86
87	11.554	1.0627428	1.1523798	10.966	1.0400405	1.2571416	87
88	11.489	1.0602722	1.1524570	10.904	1.0375707	1.2572258	88
89	11.424	1.0578298	1.1525342	10.843	1.0351289	1.2573101	89
90	11.361	1.0554148	1.1526114	10.782	1.0327145	1.2573943	90
91	11.299	1.0530267	1.1526886	10.723	1.0303271	1.2574785	91
92	11.237	1.0506648	1.1527658	10.665	1.0279658	1.2575627	92
93	11.177	1.0483286	1.1528430	10.608	1.0256301	1.2576470	93
94	11.118	1.0460174	1.1529202	10.552	1.0233195	1.2577312	94
95	11.059	1.0437309	1.1529975	10.496	1.0210336	1.2578154	95
96	11.002	1.0414684	1.1530747	10.442	1.0187717	1.2578996	96
97	10.945	1.0392294	1.1531519	10.388	1.0165334	1.2579839	97
98	10.890	1.0370136	1.1532291	10.335	1.0143182	1.2580681	98
99	10.835	1.0348203	1.1533063	10.283	1.0121255	1.2581523	99
100	10.781	1.0326493	1.1533835	10.232	1.0099550	1.2582365	100

Sine of Inclina- tion (1 over)	$n = \cdot 035$			$n = \cdot 050$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
51	13·100	1·1172855	1·4631278	10·926	1·0384773	2·0901825	51
52	12·974	1·1130820	1·4632260	10·821	1·0342764	2·0903229	52
53	12·852	1·1089587	1·4633243	10·719	1·0301557	2·0904633	53
54	12·733	1·1049128	1·4634225	10·620	1·0261124	2·0906036	54
55	12·617	1·1009415	1·4635208	10·523	1·0221436	2·0907440	55
56	12·504	1·0970418	1·4636191	10·429	1·0182466	2·0908844	56
57	12·394	1·0932113	1·4637173	10·338	1·0144187	2·0910248	57
58	12·287	1·0894477	1·4638156	10·248	1·0106577	2·0911651	58
59	12·183	1·0857488	1·4639139	10·162	1·0069613	2·0913055	59
60	12·081	1·0821122	1·4640121	10·077	1·0033273	2·0914459	60
61	11·982	1·0785360	1·4641104	9·994	0·9997537	2·0915863	61
62	11·886	1·0750181	1·4642086	9·914	0·9962384	2·0917266	62
63	11·791	1·0715567	1·4643069	9·835	0·9927796	2·0918670	63
64	11·699	1·0681500	1·4644052	9·758	0·9893755	2·0920074	64
65	11·609	1·0647963	1·4645034	9·683	0·9860244	2·0921478	65
66	11·521	1·0614940	1·4646017	9·610	0·9827248	2·0922881	66
67	11·435	1·0582416	1·4647000	9·538	0·9794749	2·0924285	67
68	11·351	1·0550376	1·4647982	9·468	0·9762734	2·0925689	68
69	11·269	1·0518806	1·4648965	9·400	0·9731190	2·0927093	69
70	11·188	1·0487692	1·4649947	9·333	0·9700103	2·0928496	70
71	11·110	1·0457021	1·4650930	9·267	0·9669458	2·0929900	71
72	11·033	1·0426780	1·4651913	9·203	0·9639243	2·0931304	72
73	10·957	1·0396958	1·4652895	9·140	0·9609447	2·0932708	73
74	10·883	1·0367544	1·4653878	9·078	0·9580058	2·0934111	74
75	10·811	1·0338527	1·4654861	9·018	0·9551067	2·0935515	75
76	10·740	1·0309895	1·4655843	8·959	0·9522461	2·0936919	76
77	10·670	1·0281640	1·4656826	8·901	0·9494231	2·0938323	77
78	10·602	1·0253751	1·4657808	8·844	0·9466368	2·0939726	78
79	10·535	1·0226219	1·4658791	8·788	0·9438863	2·0941130	79
80	10·469	1·0199034	1·4659774	8·733	0·9411704	2·0942534	80
81	10·405	1·0172189	1·4660756	8·679	0·9384885	2·0943938	81
82	10·341	1·0145675	1·4661739	8·627	0·9358397	2·0945341	82
83	10·279	1·0119485	1·4662722	8·575	0·9332282	2·0946745	83
84	10·218	1·0093609	1·4663704	8·524	0·9306381	2·0948149	84
85	10·158	1·0068041	1·4664687	8·474	0·9280840	2·0949553	85
86	10·099	1·0042773	1·4665669	8·425	0·9255598	2·0950956	86
87	10·041	1·0017799	1·4666652	8·377	0·9230650	2·0952360	87
88	9·984	0·9993113	1·4667635	8·329	0·9205989	2·0953764	88
89	9·928	0·9968706	1·4668617	8·283	0·9181608	2·0955168	89
90	9·873	0·9944573	1·4669600	8·237	0·9157501	2·0956571	90
91	9·819	0·9920709	1·4670583	8·192	0·9133663	2·0957975	91
92	9·766	0·9897108	1·4671565	8·147	0·9110087	2·0959379	92
93	9·714	0·9873762	1·4672548	8·104	0·9086767	2·0960783	93
94	9·662	0·9850667	1·4673530	8·061	0·9063698	2·0962186	94
95	9·611	0·9827819	1·4674513	8·018	0·9040876	2·0963590	95
96	9·561	0·9805211	1·4675496	7·977	0·9018294	2·0964994	96
97	9·512	0·9782839	1·4676478	7·936	0·8995947	2·0966398	97
98	9·464	0·9760698	1·4677461	7·896	0·8973832	2·0967801	98
99	9·416	0·9738782	1·4678444	7·856	0·8951942	2·0969205	99
100	9·369	0·9717088	1·4679426	7·817	0·8930274	2·0970609	100

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	24.200	1.8888071	.87749623	22.197	1.8462981	.41944025	101
102	24.081	1.8816727	.87752149	22.088	1.8441592	.41946883	102
103	23.964	1.8795592	.87754676	21.981	1.8420461	.41949640	103
104	23.849	1.8774661	.87757203	21.875	1.8399535	.41952448	104
105	23.735	1.8753932	.87759730	21.771	1.8378811	.41955255	105
106	23.628	1.8733399	.87762256	21.668	1.8358282	.41958063	106
107	23.513	1.8713059	.87764783	21.567	1.8337947	.41960870	107
108	23.404	1.8692910	.87767310	21.467	1.8317802	.41963678	108
109	23.297	1.8672947	.87769837	21.369	1.8297844	.41966485	109
110	23.191	1.8653166	.87772363	21.272	1.8278067	.41969293	110
111	23.086	1.8633564	.87774890	21.176	1.8258470	.41972100	111
112	22.983	1.8614139	.87777417	21.082	1.8239049	.41974908	112
113	22.882	1.8594887	.87779944	20.988	1.8219802	.41977715	113
114	22.781	1.8575805	.87782470	20.896	1.8200724	.41980523	114
115	22.682	1.8556890	.87784997	20.806	1.8181814	.41983330	115
116	22.585	1.8538139	.87787524	20.716	1.8163068	.41986138	116
117	22.488	1.8519550	.87790051	20.628	1.8144484	.41988945	117
118	22.393	1.8501119	.87792577	20.540	1.8126057	.41991753	118
119	22.299	1.8482845	.87795104	20.454	1.8107787	.41994560	119
120	22.206	1.8464724	.87797631	20.369	1.8089671	.41997368	120
121	22.114	1.8446754	.87800158	20.285	1.8071705	.42000175	121
122	22.024	1.8428931	.87802684	20.202	1.8053887	.42002983	122
123	21.934	1.8411255	.87805211	20.120	1.8036214	.42005790	123
124	21.846	1.8393722	.87807738	20.039	1.8018686	.42008598	124
125	21.759	1.8376331	.87810265	19.959	1.8001300	.42011405	125
126	21.672	1.8359078	.87812791	19.880	1.2984051	.42014213	126
127	21.587	1.8341962	.87815318	19.801	1.2966940	.42017020	127
128	21.503	1.8324981	.87817845	19.724	1.2949964	.42019828	128
129	21.420	1.8308132	.87820372	19.648	1.2933120	.42022635	129
130	21.337	1.8291414	.87822898	19.572	1.2916406	.42025443	130
131	21.256	1.8274824	.87825425	19.498	1.2899821	.42028250	131
132	21.176	1.8258361	.87827952	19.424	1.2883363	.42031058	132
133	21.096	1.8242024	.87830479	19.351	1.2867029	.42033865	133
134	21.017	1.8225808	.87833005	19.279	1.2850817	.42036673	134
135	20.940	1.8209713	.87835532	19.208	1.2834727	.42039480	135
136	20.863	1.8193737	.87838059	19.137	1.2818756	.42042288	136
137	20.787	1.8177879	.87840586	19.067	1.2802903	.42045095	137
138	20.712	1.8162137	.87843112	18.998	1.2787165	.42047903	138
139	20.637	1.8146508	.87845639	18.930	1.2771541	.42050710	139
140	20.564	1.8130993	.87848166	18.863	1.2756029	.42053518	140
141	20.491	1.8115587	.87850693	18.796	1.2740628	.42056325	141
142	20.419	1.8100291	.87853219	18.730	1.2725336	.42059133	142
143	20.346	1.8085103	.87855746	18.665	1.2710153	.42061940	143
144	20.277	1.8070021	.87858273	18.600	1.2695076	.42064748	144
145	20.207	1.8055043	.87860800	18.536	1.2680102	.42067555	145
146	20.138	1.8040169	.87863326	18.472	1.2665233	.42070363	146
147	20.070	1.8025396	.87865853	18.410	1.2650464	.42073170	147
148	20.002	1.8010724	.87868380	18.348	1.2635797	.42075978	148
149	19.935	1.2996151	.87870907	18.286	1.2621228	.42078785	149
150	19.869	1.2981676	.87873433	18.225	1.2606758	.42081593	150

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	20.558	1.8129904	.46188428	19.198	1.2881440	.50382880	101
102	20.458	1.8108569	.46141516	19.099	1.2810109	.50386199	102
103	20.358	1.8087444	.46144604	19.006	1.2788987	.50389568	103
104	20.261	1.8066522	.46147692	18.915	1.2768069	.50342987	104
105	20.165	1.8045802	.46150781	18.825	1.2747854	.50346306	105
106	20.069	1.8025278	.46153869	18.736	1.2726884	.50349675	106
107	19.975	1.8004947	.46156957	18.649	1.2706507	.50353044	107
108	19.883	1.2984806	.46160045	18.563	1.2686370	.50356413	108
109	19.792	1.2964852	.46163134	18.477	1.2666420	.50359782	109
110	19.702	1.2945080	.46166222	18.394	1.2646653	.50363151	110
111	19.613	1.2925487	.46169310	18.311	1.2627064	.50366520	111
112	19.526	1.2906071	.46172398	18.229	1.2607653	.50369889	112
113	19.439	1.2886828	.46175487	18.149	1.2588414	.50373258	113
114	18.354	1.2867755	.46178575	18.069	1.2569845	.50376627	114
115	18.270	1.2848848	.46181663	17.991	1.2550444	.50379996	115
116	19.187	1.2830106	.46184751	17.913	1.2531706	.50383365	116
117	19.105	1.2811526	.46187840	17.837	1.2513130	.50386734	117
118	19.024	1.2793104	.46190928	17.761	1.2494712	.50390103	118
119	18.945	1.2774838	.46194016	17.687	1.2476450	.50393472	119
120	18.866	1.2756726	.46197104	17.613	1.2458342	.50396841	120
121	18.788	1.2738765	.46200193	17.540	1.2440386	.50400210	121
122	18.711	1.2720951	.46203281	17.469	1.2422576	.50403579	122
123	18.635	1.2703283	.46206369	17.398	1.2404912	.50406948	123
124	18.560	1.2685759	.46209457	17.328	1.2387892	.50410317	124
125	18.486	1.2668377	.46212546	17.258	1.2370014	.50413686	125
126	18.413	1.2651134	.46215634	17.190	1.2352774	.50417055	126
127	18.340	1.2634027	.46218722	17.123	1.2335671	.50420424	127
128	18.269	1.2617055	.46221810	17.056	1.2318703	.50423793	128
129	18.198	1.2600215	.46224899	16.990	1.2301867	.50427162	129
130	18.128	1.2583506	.46227987	16.925	1.2285163	.50430531	130
131	18.059	1.2566925	.46231075	16.860	1.2268586	.50433900	131
132	17.991	1.2550471	.46234163	16.796	1.2252186	.50437269	132
133	17.923	1.2534142	.46237252	16.733	1.2235821	.50440638	133
134	17.856	1.2517935	.46240340	16.671	1.2219608	.50444007	134
135	17.790	1.2501849	.46243428	16.609	1.2203526	.50447376	135
136	17.726	1.2486082	.46246516	16.548	1.2187563	.50450745	136
137	17.661	1.2470033	.46249605	16.488	1.2171718	.50454114	137
138	17.597	1.2454300	.46252693	16.429	1.2155990	.50457483	138
139	17.534	1.2438680	.46255781	16.370	1.2140374	.50460852	139
140	17.471	1.2423172	.46258869	16.312	1.2124872	.50464221	140
141	17.409	1.2407775	.46261958	16.254	1.2109479	.50467590	141
142	17.348	1.2392488	.46265046	16.196	1.2094196	.50470959	142
143	17.288	1.2377309	.46268134	16.140	1.2079021	.50474328	143
144	17.228	1.2362236	.46271222	16.084	1.2063952	.50477697	144
145	17.168	1.2347267	.46274311	16.029	1.2048987	.50481066	145
146	17.110	1.2332402	.46277399	15.974	1.2034126	.50484435	146
147	17.052	1.2317638	.46280487	15.920	1.2019386	.50487804	147
148	16.994	1.2302975	.46283575	15.866	1.2004708	.50491173	148
149	16.937	1.2288411	.46286664	15.813	1.1990148	.50494542	149
150	16.881	1.2273945	.46289752	15.760	1.1975686	.50497911	150

G.

C

Sine of Inclina- tion (1 over)	n = .013			n = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	18.088	1.2561813	.54527233	17.047	1.2316584	.58721635	101
102	17.949	1.2540486	.54530882	16.964	1.2295261	.58725566	102
103	17.862	1.2519368	.54534582	16.882	1.2274147	.58729496	103
104	17.777	1.2498455	.54538182	16.801	1.2253238	.58733427	104
105	17.692	1.2477748	.54541882	16.721	1.2232530	.58737357	105
106	17.609	1.2457227	.54545481	16.642	1.2212018	.58741288	106
107	17.526	1.2436904	.54549181	16.564	1.2191699	.58745218	107
108	17.445	1.2416771	.54552781	16.488	1.2171570	.58749149	108
109	17.365	1.2396826	.54556431	16.412	1.2151629	.58753079	109
110	17.287	1.2377062	.54560080	16.338	1.2131869	.58757010	110
111	17.209	1.2357478	.54563730	16.264	1.2112288	.58760940	111
112	17.132	1.2338070	.54567380	16.192	1.2092884	.58764871	112
113	17.056	1.2318885	.54571030	16.120	1.2073653	.58768801	113
114	16.982	1.2299770	.54574679	16.049	1.2054592	.58772732	114
115	16.908	1.2280872	.54578329	15.980	1.2035699	.58776662	115
116	16.835	1.2262138	.54581979	15.911	1.2016969	.58780593	116
117	16.763	1.2243567	.54585629	15.843	1.1998401	.58784523	117
118	16.692	1.2225153	.54589278	15.776	1.1979991	.58788454	118
119	16.622	1.2206896	.54592928	15.710	1.1961737	.58792384	119
120	16.553	1.2188792	.54596578	15.645	1.1943637	.58796315	120
121	16.485	1.2170889	.54600228	15.580	1.1925688	.58800245	121
122	16.417	1.2153033	.54603877	15.516	1.1907886	.58804176	122
123	16.351	1.2135373	.54607527	15.453	1.1890230	.58808106	123
124	16.285	1.2117857	.54611177	15.391	1.1872718	.58812037	124
125	16.220	1.2100484	.54614827	15.330	1.1855349	.58815967	125
126	16.156	1.2083248	.54618476	15.269	1.1838117	.58819898	126
127	16.092	1.2066149	.54622126	15.209	1.1821022	.58823828	127
128	16.029	1.2049185	.54625776	15.150	1.1804062	.58827759	128
129	15.967	1.2032353	.54629426	15.091	1.1787234	.58831689	129
130	15.906	1.2015653	.54633075	15.033	1.1770537	.58835620	130
131	15.846	1.1999080	.54636725	14.976	1.1753969	.58839550	131
132	15.786	1.1982634	.54640375	14.919	1.1737527	.58843480	132
133	15.727	1.1966314	.54644025	14.863	1.1721210	.58847411	133
134	15.668	1.1950115	.54647674	14.808	1.1705015	.58851342	134
135	15.610	1.1934037	.54651324	14.754	1.1688941	.58855272	135
136	15.553	1.1918078	.54654974	14.699	1.1672987	.58859203	136
137	15.496	1.1902237	.54658624	14.646	1.1657150	.58863133	137
138	15.440	1.1886513	.54662273	14.593	1.1641429	.58867064	138
139	15.385	1.1870901	.54665923	14.541	1.1625821	.58870994	139
140	15.330	1.1855402	.54669573	14.489	1.1610326	.58874925	140
141	15.276	1.1840013	.54673223	14.438	1.1594941	.58878855	141
142	15.222	1.1824734	.54676872	14.387	1.1579666	.58882786	142
143	15.169	1.1809564	.54680522	14.337	1.1564499	.58886716	143
144	15.117	1.1794499	.54684172	14.287	1.1549438	.58890647	144
145	15.065	1.1779538	.54687822	14.238	1.1534481	.58894577	145
146	15.013	1.1764681	.54691471	14.189	1.1519629	.58898508	146
147	14.962	1.1749925	.54695121	14.141	1.1504877	.58902438	147
148	14.912	1.1735270	.54698771	14.094	1.1490226	.58906369	148
149	14.862	1.1720715	.54702421	14.047	1.1475674	.58910299	149
150	14.812	1.1706257	.54706070	14.000	1.1461220	.58914230	150

Sine of Inclina- tion (1 over)	$n = \cdot 015$			$n = \cdot 017$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	16·189	1·2092242	·62916088	14·776	1·1695440	·71304848	101
102	16·110	1·2070923	·62920249	14·703	1·1674128	·71309615	102
103	16·032	1·2049818	·62924460	14·632	1·1653025	·71314388	103
104	15·955	1·2028907	·62928671	14·562	1·1632126	·71319161	104
105	15·879	1·2008203	·62932883	14·493	1·1611429	·71323934	105
106	15·804	1·1987695	·62937094	14·424	1·1590928	·71328706	106
107	15·730	1·1967380	·62941305	14·357	1·1570620	·71333479	107
108	15·658	1·1947255	·62945516	14·291	1·1550502	·71338252	108
109	15·586	1·1927317	·62949728	14·225	1·1530571	·71343025	109
110	15·515	1·1907561	·62953939	14·161	1·1510823	·71347797	110
111	15·445	1·1887984	·62958150	14·097	1·1491253	·71352570	111
112	15·377	1·1868584	·62962361	14·034	1·1471860	·71357343	112
113	15·309	1·1849356	·62966573	13·972	1·1452640	·71362116	113
114	15·242	1·1830299	·62970784	13·911	1·1433591	·71366888	114
115	15·175	1·1811409	·62974995	13·851	1·1414707	·71371661	115
116	15·110	1·1792713	·62979206	13·791	1·1395988	·71376434	116
117	15·046	1·1774119	·62983418	13·732	1·1377431	·71381207	117
118	14·982	1·1755713	·62987629	13·674	1·1359032	·71385979	118
119	14·919	1·1737463	·62991840	13·617	1·1340790	·71390752	119
120	14·857	1·1719867	·62996051	13·560	1·1322701	·71395525	120
121	14·796	1·1701422	·63000263	13·504	1·1304762	·71400298	121
122	14·735	1·1683624	·63004474	13·449	1·1286972	·71405070	122
123	14·676	1·1665972	·63008685	13·395	1·1269327	·71409843	123
124	14·617	1·1648464	·63012896	13·341	1·1251826	·71414616	124
125	14·558	1·1631098	·63017108	13·288	1·1234467	·71419389	125
126	14·501	1·1613889	·63021319	13·235	1·1217246	·71424161	126
127	14·444	1·1596778	·63025530	13·183	1·1200162	·71428934	127
128	14·387	1·1579822	·63029741	13·132	1·1183213	·71433707	128
129	14·332	1·1562998	·63033953	13·081	1·1166396	·71438480	129
130	14·277	1·1546305	·63038164	13·031	1·1149710	·71443252	130
131	14·222	1·1529740	·63042375	12·981	1·1133153	·71448025	131
132	14·169	1·1513302	·63046586	12·932	1·1116722	·71452798	132
133	14·116	1·1496989	·63050798	12·884	1·1100416	·71457571	133
134	14·063	1·1480798	·63055009	12·836	1·1084232	·71462343	134
135	14·011	1·1464727	·63059220	12·789	1·1068169	·71467116	135
136	13·960	1·1448776	·63063431	12·742	1·1052225	·71471889	136
137	13·909	1·1432943	·63067643	12·695	1·1036399	·71476662	137
138	13·859	1·1417226	·63071854	12·649	1·1020689	·71481434	138
139	13·809	1·1401622	·63076065	12·604	1·1005092	·71486207	139
140	13·760	1·1386130	·63080276	12·559	1·0989608	·71490980	140
141	13·711	1·1370749	·63084488	12·515	1·0974234	·71495753	141
142	13·663	1·1355478	·63088699	12·471	1·0958970	·71500525	142
143	13·615	1·1340315	·63092910	12·427	1·0943814	·71505298	143
144	13·568	1·1325258	·63097121	12·384	1·0928764	·71510071	144
145	13·522	1·1310305	·63101333	12·342	1·0913818	·71514844	145
146	13·476	1·1295456	·63105544	12·300	1·0898976	·71519616	146
147	13·430	1·1280708	·63109755	12·258	1·0884235	·71524389	147
148	13·384	1·1265971	·63113966	12·217	1·0869595	·71529162	148
149	13·340	1·1251513	·63118178	12·176	1·0855054	·71533935	149
150	13·296	1·1237063	·63122389	12·136	1·0840612	·71538707	150

Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	13·185	1·1200888	·83888050	12·184	1·0857886	·94374056	101
102	13·121	1·1179586	·83893665	12·124	1·0836592	·94380373	102
103	13·057	1·1158493	·83899280	12·066	1·0815507	·94386690	103
104	12·995	1·1137604	·83904895	12·008	1·0794626	·94393007	104
105	12·933	1·1116917	·83910510	11·951	1·0773946	·94399324	105
106	12·872	1·1096426	·83916125	11·895	1·0753462	·94405641	106
107	12·812	1·1076128	·83921740	11·839	1·0733172	·94411958	107
108	12·753	1·1056020	·83927355	11·784	1·0713072	·94418275	108
109	12·694	1·1036099	·83932970	11·730	1·0693158	·94424591	109
110	12·637	1·1016360	·83938585	11·677	1·0673427	·94430908	110
111	12·580	1·0996800	·83944200	11·625	1·0653874	·94437225	111
112	12·524	1·0977417	·83949815	11·573	1·0634499	·94443542	112
113	12·469	1·0958207	·83955430	11·522	1·0615296	·94449859	113
114	12·414	1·0939167	·83961045	11·472	1·0596264	·94456176	114
115	12·360	1·0920294	·83966660	11·422	1·0577399	·94462493	115
116	12·307	1·0901585	·83972275	11·373	1·0558697	·94468810	116
117	12·255	1·0883088	·83977890	11·324	1·0540158	·94475126	117
118	12·203	1·0864649	·83983505	11·276	1·0521776	·94481443	118
119	12·152	1·0846416	·83989120	11·229	1·0503551	·94487760	119
120	12·101	1·0828337	·83994735	11·183	1·0485479	·94494077	120
121	12·051	1·0810409	·84000350	11·137	1·0467559	·94500394	121
122	12·002	1·0792628	·84005965	11·091	1·0449786	·94506711	122
123	11·954	1·0774993	·84011580	11·046	1·0432158	·94513028	123
124	11·906	1·0757502	·84017195	11·002	1·0414674	·94519345	124
125	11·858	1·0740153	·84022810	10·958	1·0397333	·94525661	125
126	11·811	1·0722942	·84028425	10·915	1·0380130	·94531978	126
127	11·765	1·0705868	·84034040	10·872	1·0363063	·94538295	127
128	11·719	1·0688929	·84039655	10·830	1·0346131	·94544612	128
129	11·674	1·0672122	·84045270	10·788	1·0329332	·94550929	129
130	11·629	1·0655446	·84050885	10·747	1·0312663	·94557246	130
131	11·585	1·0638898	·84056500	10·706	1·0296123	·94563563	131
132	11·541	1·0622477	·84062115	10·665	1·0279710	·94569880	132
133	11·498	1·0606180	·84067730	10·625	1·0263421	·94576196	133
134	11·455	1·0590006	·84073345	10·586	1·0247255	·94582513	134
135	11·413	1·0573953	·84078960	10·547	1·0231209	·94588830	135
136	11·371	1·0558019	·84084575	10·508	1·0215282	·94595147	136
137	11·330	1·0542203	·84090190	10·470	1·0199474	·94601464	137
138	11·289	1·0526503	·84095805	10·432	1·0183782	·94607781	138
139	11·248	1·0510916	·84101420	10·395	1·0168202	·94614098	139
140	11·208	1·0495442	·84107035	10·358	1·0152735	·94620415	140
141	11·169	1·0480078	·84112650	10·321	1·0137379	·94626731	141
142	11·130	1·0464824	·84118265	10·285	1·0122132	·94633048	142
143	11·091	1·0449678	·84123880	10·249	1·0106994	·94639365	143
144	11·053	1·0434638	·84129495	10·214	1·0091961	·94645682	144
145	11·015	1·0419702	·84135110	10·179	1·0077033	·94651999	145
146	10·977	1·0404870	·84140725	10·144	1·0062209	·94658316	146
147	10·940	1·0390139	·84146340	10·110	1·0047485	·94664633	147
148	10·903	1·0375509	·84151955	10·076	1·0032862	·94670950	148
149	10·867	1·0360978	·84157570	10·042	1·0018339	·94677266	149
150	10·831	1·0346544	·84163185	10·009	1·0003913	·94683583	150

Sine of Inclina- tion (1 over)	$n = \cdot 0250$			$n = \cdot 0275$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	11·383	1·0562539	1·0486006	10·728	1·0304999	1·1534607	101
102	11·327	1·0541252	1·0486708	10·675	1·0283718	1·1535379	102
103	11·272	1·0520174	1·0487410	10·623	1·0262646	1·1536151	103
104	11·220	1·0499300	1·0488112	10·572	1·0241778	1·1536923	104
105	11·165	1·0478627	1·0488814	10·522	1·0221112	1·1537695	105
106	11·113	1·0458151	1·0489516	10·473	1·0200642	1·1538467	106
107	11·061	1·0437868	1·0490218	10·424	1·0180365	1·1539239	107
108	11·010	1·0417774	1·0490919	10·376	1·0160278	1·1540011	108
109	10·959	1·0397867	1·0491621	10·329	1·0140378	1·1540783	109
110	10·910	1·0378143	1·0492323	10·282	1·0120660	1·1541555	110
111	10·861	1·0358597	1·0493025	10·236	1·0101121	1·1542328	111
112	10·812	1·0339229	1·0493727	10·190	1·0081759	1·1543100	112
113	10·765	1·0320034	1·0494429	10·145	1·0062571	1·1543872	113
114	10·718	1·0301008	1·0495131	10·101	1·0043552	1·1544644	114
115	10·671	1·0282150	1·0495833	10·057	1·0024700	1·1545416	115
116	10·625	1·0263456	1·0496534	10·014	1·0006012	1·1546188	116
117	10·580	1·0244923	1·0497236	9·971	0·9987486	1·1546960	117
118	10·536	1·0226548	1·0497938	9·929	0·9969118	1·1547732	118
119	10·491	1·0208330	1·0498640	9·888	0·9950906	1·1548504	119
120	10·448	1·0190265	1·0499342	9·847	0·9932848	1·1549276	120
121	10·405	1·0172352	1·0500044	9·806	0·9914941	1·1550048	121
122	10·362	1·0154588	1·0500746	9·766	0·9897181	1·1550820	122
123	10·320	1·0136965	1·0501448	9·727	0·9879567	1·1551592	123
124	10·279	1·0119488	1·0502149	9·688	0·9862097	1·1552364	124
125	10·238	1·0102154	1·0502851	9·649	0·9844769	1·1553136	125
126	10·198	1·0084958	1·0503553	9·611	0·9827579	1·1553908	126
127	10·158	1·0067898	1·0504255	9·573	0·9810526	1·1554680	127
128	10·118	1·0050974	1·0504957	9·536	0·9793608	1·1555452	128
129	10·079	1·0034181	1·0505659	9·499	0·9776822	1·1556224	129
130	10·040	1·0017519	1·0506361	9·463	0·9760167	1·1556997	130
131	10·002	1·0000986	1·0507063	9·427	0·9743640	1·1557769	131
132	9·965	0·9984579	1·0507764	9·391	0·9727240	1·1558541	132
133	9·927	0·9968298	1·0508466	9·356	0·9710965	1·1559313	133
134	9·890	0·9952139	1·0509168	9·321	0·9694812	1·1560085	134
135	9·854	0·9936100	1·0509870	9·287	0·9678780	1·1560857	135
136	9·818	0·9920180	1·0510572	9·253	0·9662867	1·1561629	136
137	9·782	0·9904379	1·0511274	9·220	0·9647072	1·1562401	137
138	9·747	0·9888694	1·0511976	9·186	0·9631393	1·1563174	138
139	9·712	0·9873121	1·0512678	9·153	0·9615827	1·1563945	139
140	9·678	0·9857661	1·0513379	9·121	0·9600374	1·1564717	140
141	9·644	0·9842312	1·0514081	9·089	0·9585031	1·1565489	141
142	9·610	0·9827073	1·0514783	9·057	0·9569798	1·1566261	142
143	9·576	0·9811941	1·0515485	9·025	0·9554673	1·1567034	143
144	9·543	0·9796916	1·0516187	8·994	0·9539654	1·1567806	144
145	9·510	0·9781994	1·0516889	8·963	0·9524739	1·1568578	145
146	9·478	0·9767176	1·0517591	8·933	0·9509928	1·1569350	146
147	9·446	0·9752460	1·0518293	8·903	0·9495218	1·1570122	147
148	9·414	0·9737845	1·0518994	8·873	0·9480609	1·1570894	148
149	9·383	0·9723328	1·0519696	8·843	0·9466099	1·1571666	149
150	9·352	0·9708909	1·0520398	8·814	0·9451687	1·1572438	150

Sine of Inclina- tion (1 over)	n = .030			n = .035			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
101	10.181	1.0078063	1.2588208	9.323	0.9695611	1.4680409	101
102	10.132	1.0056788	1.2584050	9.278	0.9674347	1.4681391	102
103	10.083	1.0035722	1.2584892	9.233	0.9653292	1.4682374	103
104	10.034	1.0014860	1.2585734	9.189	0.9632441	1.4683357	104
105	9.987	0.9994200	1.2586577	9.145	0.9611792	1.4684339	105
106	9.940	0.9973736	1.2587419	9.102	0.9591339	1.4685322	106
107	9.893	0.9953465	1.2588261	9.060	0.9571079	1.4686305	107
108	9.848	0.9933385	1.2589103	9.018	0.9551009	1.4687287	108
109	9.803	0.9913491	1.2589946	8.977	0.9531126	1.4688270	109
110	9.758	0.9893779	1.2590788	8.936	0.9511425	1.4689252	110
111	9.715	0.9874246	1.2591630	8.896	0.9491904	1.4690235	111
112	9.671	0.9854890	1.2592472	8.856	0.9472559	1.4691218	112
113	9.629	0.9835707	1.2593315	8.817	0.9453387	1.4692200	113
114	9.587	0.9816694	1.2594157	8.779	0.9434385	1.4693183	114
115	9.545	0.9797848	1.2594999	8.741	0.9415550	1.4694166	115
116	9.504	0.9779166	1.2595841	8.703	0.9396879	1.4695148	116
117	9.464	0.9760647	1.2596684	8.666	0.9378370	1.4696131	117
118	9.424	0.9742285	1.2597526	8.630	0.9360019	1.4697113	118
119	9.384	0.9724079	1.2598368	8.594	0.9341824	1.4698096	119
120	9.346	0.9706027	1.2599210	8.558	0.9323783	1.4699079	120
121	9.307	0.9688126	1.2600053	8.523	0.9305893	1.4700061	121
122	9.269	0.9670372	1.2600895	8.488	0.9288150	1.4701044	122
123	9.232	0.9652765	1.2601737	8.454	0.9270553	1.4702027	123
124	9.195	0.9635301	1.2602579	8.420	0.9253101	1.4703009	124
125	9.158	0.9617979	1.2603422	8.387	0.9235790	1.4703992	125
126	9.122	0.9600794	1.2604264	8.353	0.9218617	1.4704974	126
127	9.086	0.9583748	1.2605106	8.321	0.9201581	1.4705957	127
128	9.051	0.9566836	1.2605948	8.288	0.9184680	1.4706940	128
129	9.016	0.9550056	1.2606791	8.256	0.9167911	1.4707922	129
130	8.981	0.9533407	1.2607633	8.225	0.9151273	1.4708905	130
131	8.947	0.9516886	1.2608475	8.194	0.9134763	1.4709888	131
132	8.914	0.9500492	1.2609317	8.163	0.9118380	1.4710870	132
133	8.880	0.9484223	1.2610159	8.132	0.9102122	1.4711853	133
134	8.847	0.9468076	1.2611002	8.102	0.9085986	1.4712835	134
135	8.815	0.9452050	1.2611844	8.072	0.9069971	1.4713818	135
136	8.783	0.9436143	1.2612686	8.043	0.9054075	1.4714801	136
137	8.751	0.9420354	1.2613529	8.014	0.9038297	1.4715783	137
138	8.719	0.9404681	1.2614371	7.985	0.9022635	1.4716766	138
139	8.688	0.9389121	1.2615213	7.957	0.9007086	1.4717749	139
140	8.657	0.9373674	1.2616055	7.928	0.8991650	1.4718731	140
141	8.626	0.9358337	1.2616898	7.900	0.8976324	1.4719714	141
142	8.596	0.9343110	1.2617740	7.873	0.8961108	1.4720696	142
143	8.566	0.9327991	1.2618582	7.845	0.8946000	1.4721679	143
144	8.537	0.9312978	1.2619424	7.818	0.8930998	1.4722662	144
145	8.508	0.9298070	1.2620267	7.791	0.8916100	1.4723644	145
146	8.479	0.9283265	1.2621109	7.765	0.8901306	1.4724627	146
147	8.450	0.9268561	1.2621951	7.739	0.8886613	1.4725610	147
148	8.422	0.9253958	1.2622793	7.713	0.8872021	1.4726592	148
149	8.394	0.9239453	1.2623636	7.687	0.8857528	1.4727575	149
150	8.366	0.9225047	1.2624478	7.662	0.8843133	1.4728557	150

Sine of Inclina- tion (1 over)	$n = \cdot 050$			Sine of Inclina- tion (1 over)	$n = \cdot 009$		
	N	log. N	D		N	log. N	D
101	7.778	0.8908823	2.0972013	151	19.803	1.2967299	.37875960
102	7.740	0.8887585	2.0973416	152	19.738	1.2953018	.37878487
103	7.703	0.8866556	2.0974820	153	19.674	1.2938829	.37881014
104	7.666	0.8845731	2.0976224	154	19.610	1.2924732	.37883540
105	7.630	0.8825108	2.0977628	155	19.547	1.2910727	.37886067
106	7.594	0.8804681	2.0979031	156	19.484	1.2896813	.37888594
107	7.559	0.8784447	2.0980435	157	19.422	1.2882988	.37891121
108	7.524	0.8764403	2.0981839	158	19.361	1.2869251	.37893647
109	7.490	0.8744546	2.0983243	159	19.300	1.2855601	.37896174
110	7.456	0.8724871	2.0984646	160	19.240	1.2842037	.37898701
111	7.422	0.8705375	2.0986050	161	19.180	1.2828557	.37901228
112	7.389	0.8686056	2.0987454	162	19.121	1.2815161	.37903754
113	7.357	0.8666910	2.0988858	163	19.063	1.2801848	.37906281
114	7.325	0.8647933	2.0990261	164	19.005	1.2788616	.37908808
115	7.293	0.8629124	2.0991665	165	18.947	1.2775466	.37911335
116	7.262	0.8610479	2.0993069	166	18.890	1.2762395	.37913861
117	7.231	0.8591996	2.0994473	167	18.834	1.2749403	.37916388
118	7.201	0.8573671	2.0995876	168	18.778	1.2736489	.37918915
119	7.171	0.8555502	2.0997280	169	18.723	1.2723652	.37921442
120	7.141	0.8537487	2.0998684	170	18.668	1.2710891	.37923968
121	7.112	0.8519623	2.1000088	171	18.613	1.2698205	.37926495
122	7.083	0.8501906	2.1001491	172	18.559	1.2685594	.37929022
123	7.054	0.8484334	2.1002895	173	18.506	1.2673056	.37931549
124	7.026	0.8466907	2.1004299	174	18.453	1.2660590	.37934075
125	6.998	0.8449622	2.1005703	175	18.400	1.2648196	.37936602
126	6.970	0.8432475	2.1007106	176	18.348	1.2635873	.37939129
127	6.943	0.8415465	2.1008510	177	18.296	1.2623620	.37941656
128	6.916	0.8398589	2.1009914	178	18.245	1.2611436	.37944182
129	6.890	0.8381846	2.1011318	179	18.194	1.2599322	.37946709
130	6.863	0.8365234	2.1012721	180	18.144	1.2587275	.37949236
131	6.837	0.8348750	2.1014125	181	18.094	1.2575295	.37951763
132	6.811	0.8332393	2.1015529	182	18.044	1.2563381	.37954289
133	6.786	0.8316160	2.1016933	183	17.995	1.2551532	.37956816
134	6.761	0.8300050	2.1018336	184	17.946	1.2539748	.37959343
135	6.736	0.8284061	2.1019740	185	17.898	1.2528028	.37961870
136	6.711	0.8268191	2.1021144	186	17.850	1.2516372	.37964396
137	6.687	0.8252439	2.1022548	187	17.802	1.2504779	.37966923
138	6.663	0.8236803	2.1023951	188	17.755	1.2493248	.37969450
139	6.639	0.8221280	2.1025355	189	17.708	1.2481778	.37971977
140	6.616	0.8205869	2.1026759	190	17.662	1.2470369	.37974503
141	6.593	0.8190569	2.1028163	191	17.616	1.2459021	.37977030
142	6.570	0.8175379	2.1029566	192	17.570	1.2447731	.37979557
143	6.547	0.8160296	2.1030970	193	17.525	1.2436500	.37982084
144	6.524	0.8145320	2.1032374	194	17.480	1.2425328	.37984610
145	6.502	0.8130448	2.1033778	195	17.435	1.2414214	.37987137
146	6.480	0.8115680	2.1035181	196	17.391	1.2403157	.37989664
147	6.458	0.8101013	2.1036585	197	17.347	1.2392157	.37992191
148	6.436	0.8086446	2.1037989	198	17.303	1.2381212	.37994717
149	6.415	0.8071979	2.1039393	199	17.260	1.2370323	.37997244
150	6.394	0.8057609	2.1040796	200	17.217	1.2359488	.37999771

Sine of Inclina- tion (1 over)	n = .010			n = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	18.165	1.2592385	.42084400	16.825	1.2259576	.46292840	151
152	18.106	1.2578107	.42087208	16.770	1.2245802	.46295928	152
153	18.047	1.2563922	.42090015	16.715	1.2231122	.46299017	153
154	17.988	1.2549830	.42092823	16.661	1.2217034	.46302105	154
155	17.930	1.2535830	.42095630	16.608	1.2203038	.46305193	155
156	17.873	1.2521921	.42098438	16.555	1.2189133	.46308281	156
157	17.816	1.2508100	.42101245	16.502	1.2175317	.46311370	157
158	17.760	1.2494368	.42104053	16.450	1.2161589	.46314458	158
159	17.704	1.2480722	.42106860	16.398	1.2147948	.46317546	159
160	17.649	1.2467163	.42109668	16.347	1.2134393	.46320634	160
161	17.594	1.2453687	.42112475	16.296	1.2120921	.46323723	161
162	17.540	1.2440296	.42115283	16.246	1.2107534	.46326811	162
163	17.486	1.2426988	.42118090	16.196	1.2094230	.46329999	163
164	17.433	1.2413761	.42120898	16.147	1.2081008	.46333297	164
165	17.381	1.2400616	.42123705	16.099	1.2067867	.46336607	165
166	17.329	1.2387549	.42126513	16.050	1.2054805	.46339916	166
167	17.277	1.2374562	.42129320	16.002	1.2041822	.46343225	167
168	17.225	1.2361653	.42132128	15.955	1.2028917	.46346534	168
169	17.174	1.2348820	.42134935	15.908	1.2016089	.46349842	169
170	17.124	1.2336063	.42137743	15.861	1.2003336	.46353157	170
171	17.074	1.2323382	.42140550	15.815	1.1990659	.46356465	171
172	17.025	1.2310775	.42143358	15.769	1.1978057	.46359769	172
173	16.976	1.2298242	.42146165	15.724	1.1965528	.46363078	173
174	16.927	1.2285780	.42148973	15.679	1.1953071	.46366387	174
175	16.879	1.2273391	.42151780	15.634	1.1940686	.46369695	175
176	16.831	1.2261073	.42154588	15.590	1.1928372	.46373004	176
177	16.784	1.2248824	.42157395	15.546	1.1916128	.46376313	177
178	16.737	1.2236645	.42160203	15.502	1.1903953	.46379622	178
179	16.690	1.2224534	.42163010	15.459	1.1891847	.46382931	179
180	16.644	1.2212492	.42165818	15.416	1.1879809	.46386239	180
181	16.598	1.2200516	.42168625	15.374	1.1867838	.46389548	181
182	16.552	1.2188607	.42171433	15.332	1.1855933	.46392856	182
183	16.507	1.2176763	.42174240	15.290	1.1844093	.46396164	183
184	16.463	1.2164984	.42177048	15.249	1.1832318	.46399472	184
185	16.418	1.2153268	.42179855	15.208	1.1820609	.46402781	185
186	16.374	1.2141617	.42182663	15.167	1.1808961	.46406092	186
187	16.331	1.2130028	.42185470	15.127	1.1797376	.46409401	187
188	16.287	1.2118502	.42188278	15.086	1.1785853	.46412710	188
189	16.244	1.2107086	.42191085	15.047	1.1774392	.46416019	189
190	16.202	1.2095632	.42193893	15.007	1.1762992	.46419328	190
191	16.160	1.2084289	.42196700	14.968	1.1751653	.46422637	191
192	16.118	1.2073003	.42199508	14.929	1.1740372	.46425945	192
193	16.076	1.2061777	.42202315	14.891	1.1729150	.46429254	193
194	16.035	1.2050609	.42205123	14.853	1.1717987	.46432563	194
195	15.994	1.2039500	.42207930	14.815	1.1706882	.46435872	195
196	15.953	1.2028448	.42210738	14.777	1.1695834	.46439181	196
197	15.913	1.2017451	.42213545	14.740	1.1684842	.46442490	197
198	15.873	1.2006511	.42216353	14.703	1.1673906	.46445798	198
199	15.833	1.1995627	.42219160	14.666	1.1663026	.46449107	199
200	15.794	1.1984796	.42221968	14.629	1.1652200	.46452416	200

Sine of Inclina- tion (1 over)	$n = \cdot 012$			$n = \cdot 013$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	15.708	1.1961321	.50501280	14.764	1.1691897	.54709720	151
152	15.657	1.1947051	.50504649	14.715	1.1677631	.54713370	152
153	15.606	1.1932875	.50508018	14.667	1.1663459	.54717020	153
154	15.555	1.1918791	.50511387	14.620	1.1649379	.54720670	154
155	15.505	1.1904800	.50514756	14.573	1.1635391	.54724320	155
156	15.456	1.1890899	.50518125	14.526	1.1621494	.54727969	156
157	15.407	1.1877087	.50521494	14.480	1.1607687	.54731619	157
158	15.358	1.1863364	.50524863	14.434	1.1593967	.54735268	158
159	15.310	1.1849727	.50528232	14.389	1.1580334	.54738918	159
160	15.262	1.1836176	.50531601	14.344	1.1566787	.54742568	160
161	15.215	1.1822709	.50535970	14.300	1.1553324	.54746218	161
162	15.168	1.1809326	.50539339	14.256	1.1539946	.54749867	162
163	15.122	1.1796026	.50541708	14.212	1.1526650	.54753517	163
164	15.076	1.1782808	.50545077	14.169	1.1513436	.54757167	164
165	15.030	1.1769672	.50548446	14.126	1.1500303	.54760817	165
166	14.985	1.1756614	.50551815	14.084	1.1487249	.54764466	166
167	14.940	1.1743635	.50555184	14.042	1.1474275	.54768116	167
168	14.896	1.1730734	.50558553	14.000	1.1461378	.54771766	168
169	14.852	1.1717910	.50562922	13.959	1.1448558	.54775416	169
170	14.809	1.1705162	.50565291	13.918	1.1435813	.54779065	170
171	14.766	1.1692489	.50568660	13.878	1.1423144	.54782715	171
172	14.723	1.1679891	.50572029	13.838	1.1410550	.54786365	172
173	14.680	1.1667366	.50575398	13.798	1.1398030	.54790015	173
174	14.638	1.1654913	.50578767	13.758	1.1385581	.54793664	174
175	14.597	1.1642532	.50582136	13.719	1.1373204	.54797314	175
176	14.545	1.1630222	.50585505	13.680	1.1360898	.54800964	176
177	14.514	1.1617983	.50588874	13.642	1.1348663	.54804614	177
178	14.474	1.1605812	.50592243	13.604	1.1336496	.54808263	178
179	14.434	1.1593710	.50595612	13.566	1.1324398	.54811913	179
180	14.394	1.1581676	.50598981	13.528	1.1312368	.54815563	180
181	14.354	1.1569709	.50602350	13.491	1.1300405	.54819213	181
182	14.315	1.1557809	.50605719	13.454	1.1288508	.54822862	182
183	14.276	1.1545973	.50609088	13.417	1.1276677	.54826512	183
184	14.237	1.1534202	.50612457	13.381	1.1264910	.54830162	184
185	14.199	1.1522495	.50615826	13.345	1.1253207	.54833812	185
186	14.161	1.1510852	.50619195	13.309	1.1241568	.54837461	186
187	14.123	1.1499272	.50622564	13.274	1.1229992	.54841111	187
188	14.086	1.1487754	.50625933	13.239	1.1218479	.54844761	188
189	14.049	1.1476297	.50629302	13.204	1.1207026	.54848411	189
190	14.012	1.1464901	.50632671	13.169	1.1195634	.54852060	190
191	13.975	1.1453566	.50636040	13.135	1.1184303	.54855710	191
192	13.939	1.1442289	.50639409	13.101	1.1173030	.54859360	192
193	13.903	1.1431071	.50642778	13.067	1.1161816	.54863010	193
194	13.867	1.1419912	.50646147	13.034	1.1150661	.54866659	194
195	13.832	1.1408812	.50649516	13.000	1.1139564	.54870309	195
196	13.797	1.1397768	.50652885	12.967	1.1128525	.54873959	196
197	13.762	1.1386780	.50656254	12.935	1.1117541	.54877609	197
198	13.727	1.1375848	.50659623	12.902	1.1106613	.54881258	198
199	13.693	1.1364972	.50662992	12.870	1.1095741	.54884908	199
200	13.659	1.1354151	.50666361	12.838	1.1084923	.54888558	200

Sine of Inclina- tion (1 over)	n = .014			n = .015			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	18.954	1.1446863	.58918160	18.252	1.1222709	.63126600	151
152	18.908	1.1432601	.58922091	18.208	1.1208451	.63130811	152
153	18.863	1.1418433	.58926021	18.165	1.1194287	.63135023	153
154	18.818	1.1404357	.58929952	18.123	1.1180215	.63139234	154
155	18.773	1.1390373	.58933882	18.081	1.1166235	.63143445	155
156	18.729	1.1376480	.58937813	18.039	1.1152346	.63147656	156
157	18.686	1.1362677	.58941743	12.997	1.1138546	.63151868	157
158	18.643	1.1348961	.58945674	12.956	1.1124834	.63156079	158
159	18.600	1.1335332	.58949604	12.916	1.1111209	.63160290	159
160	18.558	1.1321789	.58953535	12.876	1.1097670	.63164501	160
161	18.516	1.1308330	.58957465	12.836	1.1084214	.63168713	161
162	18.474	1.1294955	.58961396	12.796	1.1070843	.63172924	162
163	18.433	1.1281664	.58965326	12.757	1.1057555	.63177135	163
164	18.392	1.1268454	.58969257	12.719	1.1044349	.63181346	164
165	18.352	1.1255325	.58973187	12.680	1.1031224	.63185558	165
166	18.312	1.1242275	.58977118	12.642	1.1018177	.63189769	166
167	18.272	1.1229304	.58981048	12.604	1.1005210	.63193980	167
168	18.233	1.1216411	.58984979	12.567	1.0992321	.63198191	168
169	18.194	1.1203595	.58988909	12.530	1.0979509	.63202403	169
170	18.155	1.1190854	.58992840	12.493	1.0966772	.63206614	170
171	18.117	1.1178189	.58996770	12.457	1.0954111	.63210825	171
172	18.079	1.1165599	.59000701	12.421	1.0941525	.63215036	172
173	18.041	1.1153083	.59004631	12.385	1.0929012	.63219248	173
174	18.004	1.1140638	.59008562	12.350	1.0916570	.63223459	174
175	12.967	1.1128265	.59012492	12.315	1.0904201	.63227670	175
176	12.930	1.1115962	.59016423	12.280	1.0891903	.63231881	176
177	12.894	1.1103730	.59020353	12.245	1.0879675	.63236093	177
178	12.858	1.1091567	.59024284	12.211	1.0867516	.63240304	178
179	12.822	1.1079473	.59028214	12.177	1.0855426	.63244515	179
180	12.786	1.1067448	.59032145	12.143	1.0843403	.63248726	180
181	12.751	1.1055489	.59036075	12.110	1.0831448	.63252938	181
182	12.716	1.1043596	.59040006	12.077	1.0819559	.63257149	182
183	12.682	1.1031768	.59043936	12.044	1.0807785	.63261360	183
184	12.647	1.1020005	.59047867	12.012	1.0795976	.63265571	184
185	12.613	1.1008306	.59051797	11.979	1.0784280	.63269783	185
186	12.580	1.0996671	.59055728	11.947	1.0772649	.63273994	186
187	12.546	1.0985099	.59059658	11.915	1.0761081	.63278205	187
188	12.513	1.0973589	.59063589	11.884	1.0749575	.63282416	188
189	12.480	1.0962141	.59067519	11.853	1.0738150	.63286628	189
190	12.447	1.0950753	.59071450	11.822	1.0726745	.63290839	190
191	12.415	1.0939426	.59075380	11.791	1.0715422	.63295050	191
192	12.383	1.0928157	.59079311	11.760	1.0704157	.63299261	192
193	12.351	1.0916947	.59083241	11.730	1.0692951	.63303473	193
194	12.319	1.0905796	.59087172	11.700	1.0681804	.63307684	194
195	12.288	1.0894703	.59091102	11.670	1.0670714	.63311895	195
196	12.257	1.0883667	.59095033	11.640	1.0659682	.63316106	196
197	12.226	1.0872687	.59098963	11.611	1.0648706	.63320318	197
198	12.195	1.0861763	.59102894	11.582	1.0637786	.63324529	198
199	12.164	1.0850895	.59106824	11.553	1.0626922	.63328740	199
200	12.134	1.0840081	.59110755	11.524	1.0616112	.63332951	200

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	12.096	1.0826266	.71543480	10.795	1.0332208	.84168800	151
152	12.056	1.0812015	.71548253	10.760	1.0317967	.84174415	152
153	12.017	1.0797858	.71553026	10.725	1.0303820	.84180030	153
154	11.978	1.0783793	.71557798	10.690	1.0289765	.84185645	154
155	11.939	1.0769820	.71562571	10.656	1.0275802	.84191260	155
156	11.901	1.0755938	.71567344	10.622	1.0261930	.84196875	156
157	11.864	1.0742145	.71572117	10.588	1.0248147	.84202490	157
158	11.826	1.0728440	.71576889	10.555	1.0234451	.84208105	158
159	11.789	1.0714822	.71581662	10.522	1.0220848	.84213720	159
160	11.753	1.0701290	.71586435	10.489	1.0207321	.84219335	160
161	11.716	1.0687842	.71591208	10.457	1.0193888	.84224950	161
162	11.680	1.0674478	.71595980	10.425	1.0180529	.84230565	162
163	11.645	1.0661197	.71600753	10.393	1.0167258	.84236180	163
164	11.609	1.0647998	.71605526	10.361	1.0154069	.84241795	164
165	11.574	1.0634880	.71610299	10.330	1.0140961	.84247410	165
166	11.539	1.0621841	.71615071	10.299	1.0127932	.84253025	166
167	11.505	1.0608881	.71619844	10.268	1.0114982	.84258640	167
168	11.471	1.0595999	.71624617	10.238	1.0102110	.84264255	168
169	11.437	1.0583194	.71629390	10.208	1.0089315	.84269870	169
170	11.404	1.0570464	.71634162	10.178	1.0076594	.84275485	170
171	11.371	1.0557810	.71638935	10.148	1.0063950	.84281100	171
172	11.338	1.0545231	.71643708	10.119	1.0051381	.84286715	172
173	11.305	1.0532725	.71648481	10.090	1.0038885	.84292330	173
174	11.273	1.0520291	.71653253	10.061	1.0026461	.84297945	174
175	11.241	1.0507929	.71658026	10.033	1.0014108	.84303560	175
176	11.209	1.0495638	.71662799	10.004	1.0001827	.84309175	176
177	11.177	1.0483417	.71667572	9.976	0.9989616	.84314790	177
178	11.146	1.0471265	.71672344	9.948	0.9977474	.84320405	178
179	11.115	1.0459182	.71677117	9.921	0.9965401	.84326020	179
180	11.085	1.0447167	.71681890	9.893	0.9953396	.84331635	180
181	11.054	1.0435219	.71686663	9.866	0.9941458	.84337250	181
182	11.024	1.0423337	.71691435	9.839	0.9929586	.84342865	182
183	10.994	1.0411520	.71696208	9.813	0.9917779	.84348480	183
184	10.964	1.0399768	.71700981	9.786	0.9906036	.84354095	184
185	10.935	1.0388080	.71705754	9.760	0.9894358	.84359710	185
186	10.906	1.0376456	.71710526	9.734	0.9882744	.84365325	186
187	10.876	1.0364895	.71715299	9.708	0.9871193	.84370940	187
188	10.848	1.0353396	.71720072	9.683	0.9860204	.84376555	188
189	10.819	1.0341958	.71724845	9.657	0.9848276	.84382170	189
190	10.791	1.0330581	.71729617	9.631	0.9836909	.84387785	190
191	10.763	1.0319265	.71734390	9.606	0.9825608	.84393400	191
192	10.735	1.0308007	.71739163	9.582	0.9814354	.84399015	192
193	10.707	1.0296808	.71743936	9.557	0.9803165	.84404630	193
194	10.680	1.0285668	.71748708	9.532	0.9792035	.84410245	194
195	10.653	1.0274586	.71753481	9.508	0.9780968	.84415860	195
196	10.626	1.0263561	.71758254	9.484	0.9769948	.84421475	196
197	10.599	1.0252591	.71763027	9.460	0.9758989	.84427090	197
198	10.572	1.0241678	.71767799	9.436	0.9748085	.84432705	198
199	10.546	1.0230821	.71772572	9.413	0.9737238	.84438320	199
200	10.520	1.0220018	.71777345	9.390	0.9726445	.84443935	200

Sine of Inclina- tion (1 over)	n = .0225			n = .0250			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	9·976	0·9989585	·94689900	9·321	0·9694588	1·0521100	151
152	9·943	0·9975351	·94696217	9·290	0·9680361	1·0521802	152
153	9·911	0·9961212	·94702534	9·260	0·9666229	1·0522504	153
154	9·879	0·9947164	·94708851	9·230	0·9652188	1·0523206	154
155	9·847	0·9933208	·94715168	9·201	0·9638239	1·0523908	155
156	9·816	0·9919344	·94721485	9·171	0·9624382	1·0524609	156
157	9·785	0·9905568	·94727801	9·142	0·9610614	1·0525311	157
158	9·754	0·9891881	·94734118	9·114	0·9596938	1·0526013	158
159	9·724	0·9878280	·94740435	9·085	0·9583339	1·0526715	159
160	9·693	0·9864766	·94746752	9·057	0·9569832	1·0527417	160
161	9·664	0·9851335	·94753069	9·029	0·9556409	1·0528119	161
162	9·634	0·9837989	·94759386	9·001	0·9543069	1·0528821	162
163	9·604	0·9824725	·94765703	8·974	0·9529812	1·0529523	163
164	9·575	0·9811544	·94772020	8·947	0·9516637	1·0530224	164
165	9·547	0·9798443	·94778336	8·920	0·9503543	1·0530926	165
166	9·518	0·9785421	·94784653	8·893	0·9490529	1·0531628	166
167	9·490	0·9772479	·94790970	8·867	0·9477594	1·0532330	167
168	9·462	0·9759614	·94797287	8·840	0·9464736	1·0533032	168
169	9·434	0·9746827	·94803604	8·814	0·9451955	1·0533734	169
170	9·406	0·9734114	·94809921	8·789	0·9439250	1·0534436	170
171	9·379	0·9721477	·94816238	8·763	0·9426620	1·0535138	171
172	9·352	0·9708916	·94822555	8·738	0·9414066	1·0535839	172
173	9·325	0·9696427	·94828871	8·713	0·9401584	1·0536541	173
174	9·298	0·9684010	·94835188	8·688	0·9389174	1·0537243	174
175	9·272	0·9671666	·94841505	8·663	0·9376837	1·0537945	175
176	9·246	0·9659393	·94847822	8·639	0·9364570	1·0538647	176
177	9·220	0·9647189	·94854139	8·615	0·9352374	1·0539349	177
178	9·194	0·9635054	·94860456	8·591	0·9340246	1·0540051	178
179	9·169	0·9622989	·94866773	8·567	0·9328187	1·0540753	179
180	9·143	0·9610991	·94873090	8·543	0·9316197	1·0541454	180
181	9·118	0·9599060	·94879406	8·520	0·9304273	1·0542156	181
182	9·093	0·9587196	·94885723	8·497	0·9292416	1·0542858	182
183	9·069	0·9575396	·94892040	8·474	0·9280623	1·0543560	183
184	9·044	0·9563662	·94898357	8·451	0·9268895	1·0544262	184
185	9·020	0·9551991	·94904674	8·428	0·9257232	1·0544964	185
186	8·996	0·9540384	·94910991	8·405	0·9245632	1·0545666	186
187	8·972	0·9528841	·94917308	8·383	0·9234095	1·0546368	187
188	8·948	0·9517359	·94923625	8·361	0·9222621	1·0547069	188
189	8·925	0·9505939	·94929941	8·339	0·9211207	1·0547771	189
190	8·901	0·9494579	·94936258	8·317	0·9199854	1·0548473	190
191	8·878	0·9483280	·94942575	8·296	0·9188563	1·0549175	191
192	8·855	0·9472040	·94948892	8·274	0·9177329	1·0549877	192
193	8·833	0·9460858	·94955209	8·253	0·9166154	1·0550579	193
194	8·810	0·9449735	·94961526	8·232	0·9155039	1·0551281	194
195	8·788	0·9438671	·94967843	8·211	0·9143981	1·0551983	195
196	8·765	0·9427663	·94974160	8·190	0·9132981	1·0552684	196
197	8·743	0·9416711	·94980476	8·170	0·9122036	1·0553386	197
198	8·721	0·9405815	·94986793	8·149	0·9111147	1·0554088	198
199	8·700	0·9394976	·94993110	8·129	0·9100315	1·0554790	199
200	8·678	0·9384190	·94999427	8·109	0·9089536	1·0555492	200

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	8-785	0-9437872	1-1573210	8-338	0-9210738	1-2625320	151
152	8-756	0-9423152	1-1573982	8-311	0-9196524	1-2626162	152
153	8-728	0-9409026	1-1574754	8-284	0-9182405	1-2627005	153
154	8-700	0-9394992	1-1575526	8-257	0-9168876	1-2627847	154
155	8-672	0-9381050	1-1576298	8-231	0-9154441	1-2628689	155
156	8-644	0-9367199	1-1577070	8-205	0-9140596	1-2629531	156
157	8-617	0-9353436	1-1577842	8-179	0-9126840	1-2630374	157
158	8-590	0-9339762	1-1578614	8-153	0-9113172	1-2631216	158
159	8-563	0-9326175	1-1579387	8-128	0-9099591	1-2632058	159
160	8-536	0-9312674	1-1580159	8-102	0-9086096	1-2632900	160
161	8-510	0-9299257	1-1580931	8-077	0-9072684	1-2633743	161
162	8-484	0-9285924	1-1581703	8-053	0-9059357	1-2634585	162
163	8-458	0-9272674	1-1582475	8-028	0-9046112	1-2635427	163
164	8-432	0-9259506	1-1583247	8-004	0-9032951	1-2636269	164
165	8-407	0-9246419	1-1584019	7-980	0-9019870	1-2637112	165
166	8-382	0-9233411	1-1584791	7-956	0-9006868	1-2637954	166
167	8-357	0-9220482	1-1585563	7-932	0-8993945	1-2638796	167
168	8-332	0-9207630	1-1586335	7-909	0-8981100	1-2639638	168
169	8-308	0-9194856	1-1587107	7-886	0-8968332	1-2640481	169
170	8-284	0-9182157	1-1587879	7-863	0-8955639	1-2641323	170
171	8-260	0-9169534	1-1588651	7-840	0-8943022	1-2642165	171
172	8-236	0-9156986	1-1589423	7-817	0-8930480	1-2643007	172
173	8-212	0-9144511	1-1590195	7-795	0-8918010	1-2643850	173
174	8-189	0-9132108	1-1590967	7-773	0-8905613	1-2644692	174
175	8-165	0-9119777	1-1591740	7-750	0-8893289	1-2645534	175
176	8-142	0-9107517	1-1592512	7-728	0-8881034	1-2646376	176
177	8-120	0-9095327	1-1593284	7-707	0-8868850	1-2647219	177
178	8-097	0-9083205	1-1594056	7-686	0-8856735	1-2648061	178
179	8-074	0-9071153	1-1594828	7-664	0-8844689	1-2648903	179
180	8-052	0-9059169	1-1595600	7-643	0-8832711	1-2649745	180
181	8-030	0-9047252	1-1596372	7-622	0-8820800	1-2650588	181
182	8-008	0-9035400	1-1597144	7-601	0-8808955	1-2651430	182
183	7-987	0-9023615	1-1597916	7-581	0-8797175	1-2652272	183
184	7-965	0-9011893	1-1598688	7-560	0-8785459	1-2653114	184
185	7-944	0-9000236	1-1599460	7-540	0-8773808	1-2653957	185
186	7-923	0-8988643	1-1600232	7-520	0-8762221	1-2654799	186
187	7-902	0-8977113	1-1601004	7-500	0-8750697	1-2655641	187
188	7-881	0-8965645	1-1601776	7-480	0-8739235	1-2656483	188
189	7-860	0-8954238	1-1602548	7-461	0-8727834	1-2657326	189
190	7-840	0-8942892	1-1603320	7-441	0-8716494	1-2658168	190
191	7-819	0-8931606	1-1604093	7-422	0-8705215	1-2659010	191
192	7-799	0-8920379	1-1604865	7-403	0-8693994	1-2659852	192
193	7-779	0-8909211	1-1605637	7-384	0-8682832	1-2660695	193
194	7-759	0-8898102	1-1606409	7-365	0-8671729	1-2661537	194
195	7-739	0-8887051	1-1607181	7-346	0-8660684	1-2662379	195
196	7-720	0-8876057	1-1607953	7-328	0-8649695	1-2663221	196
197	7-700	0-8865118	1-1608725	7-309	0-8638768	1-2664064	197
198	7-681	0-8854236	1-1609497	7-291	0-8627887	1-2664906	198
199	7-662	0-8843409	1-1610269	7-273	0-8617067	1-2665748	199
200	7-643	0-8832637	1-1611041	7-255	0-8606301	1-2666590	200

Sine of Inclina- tion (1 over)	n = .035			n = .050			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
151	7.686	0.8828885	1.4729540	6.878	0.8043337	2.1042200	151
152	7.611	0.8814632	1.4730523	6.852	0.8029160	2.1043604	152
153	7.587	0.8800523	1.4731505	6.832	0.8015076	2.1045008	153
154	7.562	0.8786505	1.4732488	6.811	0.8001085	2.1046411	154
155	7.538	0.8772580	1.4733471	6.291	0.7987186	2.1047815	155
156	7.514	0.8758746	1.4734453	6.271	0.7973378	2.1049219	156
157	7.490	0.8745001	1.4735436	6.251	0.7959658	2.1050623	157
158	7.467	0.8731844	1.4736418	6.232	0.7946027	2.1052028	158
159	7.444	0.8717774	1.4737401	6.212	0.7932483	2.1053430	159
160	7.421	0.8704290	1.4738384	6.193	0.7919024	2.1054834	160
161	7.398	0.8690890	1.4739366	6.174	0.7905650	2.1056238	161
162	7.375	0.8677573	1.4740349	6.155	0.7892360	2.1057641	162
163	7.352	0.8664340	1.4741332	6.136	0.7879152	2.1059045	163
164	7.330	0.8651189	1.4742314	6.118	0.7866026	2.1060449	164
165	7.308	0.8638119	1.4743297	6.100	0.7852982	2.1061853	165
166	7.286	0.8625128	1.4744279	6.081	0.7840017	2.1063256	166
167	7.265	0.8612216	1.4745262	6.063	0.7827131	2.1064660	167
168	7.243	0.8599382	1.4746245	6.046	0.7814322	2.1066064	168
169	7.222	0.8586625	1.4747227	6.028	0.7801591	2.1067468	169
170	7.201	0.8573942	1.4748210	6.010	0.7788934	2.1068871	170
171	7.180	0.8561336	1.4749193	5.993	0.7776354	2.1070275	171
172	7.159	0.8548805	1.4750175	5.976	0.7763848	2.1071679	172
173	7.139	0.8536347	1.4751158	5.959	0.7751416	2.1073083	173
174	7.119	0.8523961	1.4752140	5.942	0.7739056	2.1074486	174
175	7.098	0.8511647	1.4753123	5.925	0.7726767	2.1075890	175
176	7.078	0.8499404	1.4754106	5.908	0.7714550	2.1077294	176
177	7.059	0.8487230	1.4755088	5.892	0.7702402	2.1078698	177
178	7.039	0.8475126	1.4756071	5.875	0.7690324	2.1080101	178
179	7.020	0.8463091	1.4757054	5.859	0.7678315	2.1081505	179
180	7.000	0.8451124	1.4758036	5.843	0.7666373	2.1082909	180
181	6.981	0.8439224	1.4759019	5.827	0.7654499	2.1084313	181
182	6.962	0.8427390	1.4760001	5.811	0.7642690	2.1085716	182
183	6.943	0.8415620	1.4760984	5.796	0.7630947	2.1087120	183
184	6.925	0.8403916	1.4761967	5.780	0.7619268	2.1088524	184
185	6.906	0.8392276	1.4762949	5.765	0.7607653	2.1089928	185
186	6.888	0.8380700	1.4763932	5.749	0.7596103	2.1091331	186
187	6.869	0.8369187	1.4764915	5.734	0.7584615	2.1092735	187
188	6.851	0.8357736	1.4765897	5.719	0.7573190	2.1094139	188
189	6.833	0.8346345	1.4766880	5.704	0.7561826	2.1095543	189
190	6.816	0.8335016	1.4767862	5.689	0.7550522	2.1096946	190
191	6.798	0.8323748	1.4768845	5.675	0.7539280	2.1098350	191
192	6.780	0.8312538	1.4769828	5.660	0.7528095	2.1099754	192
193	6.763	0.8301387	1.4770810	5.645	0.7516980	2.1101158	193
194	6.746	0.8290294	1.4771793	5.631	0.7505903	2.1102561	194
195	6.729	0.8279260	1.4772776	5.617	0.7494895	2.1103965	195
196	6.712	0.8268283	1.4773758	5.603	0.7483943	2.1105369	196
197	6.695	0.8257361	1.4774749	5.589	0.7473047	2.1106773	197
198	6.678	0.8246496	1.4775723	5.575	0.7462208	2.1108176	198
199	6.661	0.8235687	1.4776706	5.561	0.7451424	2.1109580	199
200	6.645	0.8224932	1.4777689	5.547	0.7440695	2.1110984	200

Sine of Inclina- tion (1 over)	$n = \cdot 009$			$n = \cdot 010$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	17·006	1·2806119	·38012405	15·601	1·1981450	·42236005	205
210	16·804	1·2254042	·38025038	15·415	1·1879396	·42250043	210
215	16·608	1·2203197	·38037672	15·236	1·1828573	·42264080	215
220	16·419	1·2153526	·38050306	15·062	1·1778924	·42278118	220
225	16·237	1·2104977	·38062940	14·895	1·1780398	·42292155	225
230	16·060	1·2057501	·38075573	14·733	1·1682944	·42306193	230
235	15·889	1·2011051	·38088207	14·576	1·1636517	·42320230	235
240	15·724	1·1965585	·38100841	14·425	1·1591073	·42334268	240
245	15·563	1·1921060	·38113475	14·278	1·1546571	·42348305	245
250	15·408	1·1877440	·38126108	14·135	1·1502974	·42362343	250
255	15·257	1·1834690	·38138742	13·997	1·1460247	·42376380	255
260	15·110	1·1792775	·38151376	13·862	1·1418354	·42390418	260
265	14·968	1·1751662	·38164010	13·732	1·1377263	·42404455	265
270	14·830	1·1711823	·38176643	13·605	1·1336946	·42418493	270
275	14·695	1·1671728	·38189277	13·481	1·1297374	·42432530	275
280	14·564	1·1632852	·38201911	13·361	1·1258521	·42446568	280
285	14·437	1·1594668	·38214545	13·245	1·1220360	·42460605	285
290	14·312	1·1557152	·38227178	13·131	1·1182876	·42474643	290
295	14·191	1·1520282	·38239812	13·020	1·1146019	·42488680	295
300	14·074	1·1484036	·38252446	12·912	1·1109796	·42502718	300
305	13·959	1·1448393	·38265080	12·806	1·1074175	·42516755	305
310	13·846	1·1413333	·38277713	12·703	1·1039137	·42530793	310
315	13·737	1·1378839	·38290347	12·603	1·1004666	·42544830	315
320	13·630	1·1344893	·38302981	12·505	1·0970742	·42558868	320
325	13·525	1·1311473	·38315615	12·409	1·0937347	·42572905	325
330	13·423	1·1278573	·38328248	12·315	1·0904467	·42586943	330
335	13·323	1·1246169	·38340882	12·224	1·0872085	·42600980	335
340	13·226	1·1214249	·38353516	12·134	1·0840187	·42615018	340
345	13·130	1·1182798	·38366150	12·047	1·0808759	·42629055	345
350	13·037	1·1151803	·38378788	11·961	1·0777787	·42643093	350
355	12·946	1·1121251	·38391417	11·878	1·0747257	·42657130	355
360	12·856	1·1091129	·38404051	11·795	1·0717159	·42671168	360
365	12·769	1·1061427	·38416685	11·715	1·0687479	·42685205	365
370	12·683	1·1032133	·38429318	11·636	1·0658207	·42699243	370
375	12·599	1·1003236	·38441952	11·559	1·0629333	·42713280	375
380	12·516	1·0974725	·38454586	11·484	1·0600844	·42727318	380
385	12·435	1·0946589	·38467220	11·410	1·0572730	·42741355	385
390	12·356	1·0918819	·38479853	11·337	1·0544983	·42755393	390
395	12·278	1·0891407	·38492487	11·266	1·0517593	·42769430	395
400	12·202	1·0864342	·38505121	11·196	1·0490550	·42783468	400
405	12·127	1·0837616	·38517755	11·127	1·0463848	·42797505	405
410	12·054	1·0811222	·38530388	11·060	1·0437476	·42811543	410
415	11·982	1·0785151	·38543022	10·994	1·0411427	·42825580	415
420	11·911	1·0759395	·38555656	10·929	1·0385693	·42839618	420
425	11·841	1·0733946	·38568290	10·865	1·0360266	·42853655	425
430	11·773	1·0708798	·38580923	10·802	1·0335141	·42867693	430
435	11·706	1·0683943	·38593557	10·741	1·0310310	·42881730	435
440	11·640	1·0659376	·38606191	10·680	1·0285765	·42895768	440
445	11·575	1·0635089	·38618825	10·621	1·0261500	·42909805	445
450	11·511	1·0611076	·38631458	10·562	1·0237509	·42923843	450

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	14.451	1.1598876	.46459606	28.492	1.1300847	.50688206	205
210	14.279	1.1546843	.46475047	18.882	1.1248835	.50700051	210
215	14.113	1.1496042	.46490488	18.177	1.1198055	.50716896	215
220	13.952	1.1446415	.46505929	18.027	1.1148450	.50738741	220
225	13.797	1.1397911	.46521371	12.882	1.1099966	.50750586	225
230	13.647	1.1350479	.46536812	12.743	1.1052555	.50767431	230
235	13.502	1.1304073	.46552253	12.607	1.1006170	.50784276	235
240	13.362	1.1258650	.46567694	12.476	1.0960768	.50801121	240
245	13.226	1.1214169	.46583136	12.349	1.0916309	.50817966	245
250	13.094	1.1170595	.46598577	12.226	1.0872754	.50834811	250
255	12.965	1.1127889	.46614018	12.106	1.0830070	.50851656	255
260	12.841	1.1086018	.46629459	11.990	1.0788220	.50868501	260
265	12.720	1.1044950	.46644901	11.877	1.0747172	.50885346	265
270	12.603	1.1004655	.46660342	11.768	1.0706897	.50902191	270
275	12.489	1.0965104	.46675788	11.661	1.0667368	.50919036	275
280	12.377	1.0926272	.46691224	11.557	1.0628557	.50935881	280
285	12.269	1.0888132	.46706666	11.456	1.0590439	.50952726	285
290	12.164	1.0850661	.46722107	11.358	1.0552988	.50969571	290
295	12.061	1.0813885	.46737548	11.262	1.0516183	.50986416	295
300	11.961	1.0777634	.46752989	11.168	1.0480002	.51003261	300
305	11.863	1.0742035	.46768431	11.078	1.0444424	.51020106	305
310	11.768	1.0707019	.46783872	10.989	1.0409429	.51036951	310
315	11.675	1.0672569	.46799313	10.902	1.0375000	.51053796	315
320	11.584	1.0638667	.46814754	10.817	1.0341118	.51070641	320
325	11.496	1.0605294	.46830196	10.734	1.0307766	.51087486	325
330	11.409	1.0572434	.46845637	10.654	1.0274928	.51104331	330
335	11.324	1.0540075	.46861078	10.574	1.0242589	.51121176	335
340	11.241	1.0508199	.46876519	10.497	1.0210734	.51138021	340
345	11.160	1.0476793	.46891961	10.422	1.0179348	.51154866	345
350	11.081	1.0445842	.46907402	10.348	1.0148418	.51171711	350
355	11.004	1.0415333	.46922843	10.275	1.0117931	.51188556	355
360	10.928	1.0385256	.46938284	10.204	1.0087875	.51205401	360
365	10.853	1.0355598	.46953726	10.135	1.0058238	.51222246	365
370	10.780	1.0326349	.46969167	10.067	1.0029009	.51239091	370
375	10.709	1.0297496	.46984608	10.000	1.0000176	.51255936	375
380	10.639	1.0269028	.47000049	9.935	0.9971730	.51272781	380
385	10.570	1.0240936	.47015491	9.871	0.9943659	.51289626	385
390	10.503	1.0213210	.47030932	9.808	0.9915954	.51306471	390
395	10.437	1.0185843	.47046373	9.747	0.9888607	.51323316	395
400	10.372	1.0158821	.47061814	9.686	0.9861607	.51340161	400
405	10.309	1.0132140	.47077256	9.627	0.9834946	.51357006	405
410	10.247	1.0105789	.47092697	9.569	0.9808616	.51373851	410
415	10.185	1.0079762	.47108138	9.512	0.9782810	.51390696	415
420	10.125	1.0054050	.47123579	9.456	0.9756919	.51407541	420
425	10.066	1.0028643	.47139021	9.401	0.9731535	.51424386	425
430	10.008	1.0003541	.47154462	9.346	0.9706452	.51441231	430
435	9.951	0.9978731	.47169903	9.293	0.9681662	.51458076	435
440	9.895	0.9954208	.47185344	9.241	0.9657160	.51474921	440
445	9.840	0.9929965	.47200786	9.190	0.9632937	.51491766	445
450	9.786	0.9905995	.47216227	9.139	0.9608989	.51508611	450

Sine of Inclina- tion (1 over)	<i>n</i> = .013			<i>n</i> = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	12·681	1·1031640	·54906807	11·986	1·0786818	·59180407	205
210	12·530	1·0979649	·54925055	11·844	1·0734846	·59150060	210
215	12·385	1·0928889	·54943804	11·706	1·0684105	·59169712	215
220	12·244	1·0879908	·54961553	11·573	1·0634539	·59189865	220
225	12·108	1·0830840	·54979802	11·445	1·0586095	·59209017	225
230	11·977	1·0783449	·54998050	11·321	1·0538728	·59228670	230
235	11·850	1·0737085	·55016299	11·201	1·0492878	·59248822	235
240	11·727	1·0691703	·55034548	11·084	1·0447016	·59268775	240
245	11·607	1·0647263	·55052797	10·971	1·0402596	·59287627	245
250	11·491	1·0603729	·55071045	10·862	1·0359081	·59307280	250
255	11·379	1·0561064	·55089294	10·756	1·0316436	·59326932	255
260	11·270	1·0519235	·55107543	10·653	1·0274626	·59346585	260
265	11·164	1·0478208	·55125792	10·553	1·0233618	·59366237	265
270	11·061	1·0437953	·55144040	10·455	1·0193383	·59385890	270
275	10·961	1·0398444	·55162289	10·361	1·0153893	·59405542	275
280	10·863	1·0359653	·55180538	10·269	1·0115122	·59425195	280
285	10·769	1·0321554	·55198787	10·179	1·0077042	·59444847	285
290	10·676	1·0284123	·55217035	10·092	1·0039631	·59464500	290
295	10·586	1·0247338	·55235284	10·007	1·0002866	·59484152	295
300	10·498	1·0211178	·55253533	9·924	0·9966724	·59503805	300
305	10·413	1·0175620	·55271782	9·843	0·9931186	·59523457	305
310	10·329	1·0140646	·55290030	9·764	0·9896231	·59543110	310
315	10·248	1·0106237	·55308279	9·687	0·9861841	·59562762	315
320	10·168	1·0072375	·55326528	9·612	0·9827999	·59582415	320
325	10·090	1·0039043	·55344777	9·538	0·9794687	·59602067	325
330	10·114	1·0006126	·55363025	9·466	0·9761888	·59621720	330
335	9·940	0·9973907	·55381274	9·396	0·9729589	·59641372	335
340	9·868	0·9942071	·55399523	9·328	0·9697773	·59661025	340
345	9·796	0·9910705	·55417772	9·261	0·9666427	·59680677	345
350	9·727	0·9879795	·55436020	9·195	0·9635536	·59700230	350
355	9·659	0·9849328	·55454269	9·131	0·9605089	·59719982	355
360	9·592	0·9819292	·55472518	9·068	0·9575072	·59739635	360
365	9·527	0·9789675	·55490767	9·006	0·9545474	·59759287	365
370	9·463	0·9760466	·55509015	8·946	0·9516284	·59778940	370
375	9·401	0·9731654	·55527264	8·887	0·9487491	·59798592	375
380	9·339	0·9703227	·55545513	8·829	0·9459084	·59818245	380
385	9·279	0·9675176	·55563762	8·772	0·9431052	·59837897	385
390	9·220	0·9647492	·55582010	8·716	0·9403387	·59857550	390
395	9·163	0·9620164	·55600259	8·662	0·9376079	·59877202	395
400	9·106	0·9593184	·55618508	8·608	0·9349118	·59896855	400
405	9·050	0·9566544	·55636757	8·556	0·9322498	·59916507	405
410	8·995	0·9540235	·55655005	8·504	0·9296208	·59936160	410
415	8·942	0·9514248	·55673254	8·453	0·9270241	·59955812	415
420	8·889	0·9488577	·55691503	8·403	0·9244589	·59975465	420
425	8·837	0·9463218	·55709752	8·355	0·9219244	·59995117	425
430	8·786	0·9438150	·55728000	8·307	0·9194201	·60014770	430
435	8·736	0·9413381	·55746249	8·259	0·9169451	·60034422	435
440	8·687	0·9388899	·55764498	8·213	0·9144988	·60054075	440
445	8·639	0·9364696	·55782747	8·167	0·9120805	·60073727	445
450	8·592	0·9340767	·55800995	8·122	0·9096895	·60093380	450

Sine of Inclina- tion (1 over)	n = -015			n = -017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	11-884	1-0562867	-68854008	10-892	1-0166809	-71801209	205
210	11-248	1-0510914	-68875064	10-268	1-0114892	-71825072	210
215	11-118	1-0460192	-68896120	10-149	1-0064206	-71848986	215
220	10-992	1-0410645	-68417176	10-084	1-0014694	-71872800	220
225	10-870	1-0862220	-68488288	9-928	0-9966805	-71896664	225
230	10-752	1-0814867	-68459289	9-815	0-9918987	-71920527	230
235	10-638	1-0268541	-68480845	9-711	0-9872697	-71944891	235
240	10-527	1-0228198	-68501401	9-610	0-9827389	-71968255	240
245	10-420	1-0178796	-68522458	9-518	0-9788028	-71992119	245
250	10-316	1-0185800	-68548514	9-418	0-9739568	-72015982	250
255	10-216	1-0092674	-68564570	9-326	0-9696972	-72039848	255
260	10-118	1-0050888	-68585626	9-237	0-9655216	-72063710	260
265	10-023	1-0009893	-68606683	9-150	0-9614268	-72087574	265
270	9-980	0-9969677	-68627789	9-066	0-9574083	-72111437	270
275	9-841	0-9930206	-68648795	8-984	0-9534647	-72135301	275
280	9-753	0-9891453	-68669851	8-904	0-9495930	-72159165	280
285	9-668	0-9853893	-68690908	8-826	0-9457905	-72188029	285
290	9-585	0-9816000	-68711964	8-751	0-9420548	-72206892	290
295	9-504	0-9779253	-68738020	8-677	0-9383837	-72230756	295
300	9-426	0-9743181	-68754076	8-605	0-9347750	-72254620	300
305	9-349	0-9707611	-68775133	8-536	0-9312266	-72278484	305
310	9-274	0-9672675	-68796189	8-467	0-9277365	-72302347	310
315	9-201	0-9638804	-68817245	8-400	0-9243080	-72326211	315
320	9-130	0-9604480	-68838301	8-335	0-9209242	-72350075	320
325	9-060	0-9571187	-68859358	8-272	0-9175984	-72373939	325
330	8-992	0-9538407	-68880414	8-210	0-9143240	-72397802	330
335	8-925	0-9506126	-68901470	8-149	0-9110994	-72421666	335
340	8-860	0-9474329	-68922526	8-090	0-9079233	-72445530	340
345	8-796	0-9443001	-68943583	8-032	0-9047941	-72469394	345
350	8-734	0-9412129	-68964639	7-975	0-9017104	-72493257	350
355	8-673	0-9381700	-68985695	7-919	0-8986711	-72517121	355
360	8-613	0-9351702	-64006751	7-865	0-8956748	-72540985	360
365	8-555	0-9322123	-64027808	7-811	0-8927205	-72564849	365
370	8-497	0-9292952	-64048864	7-759	0-8898069	-72588712	370
375	8-441	0-9264178	-64069920	7-708	0-8869331	-72612576	375
380	8-386	0-9235789	-64090976	7-658	0-8840979	-72636440	380
385	8-333	0-9207776	-64112033	7-609	0-8813001	-72660304	385
390	8-280	0-9180130	-64133089	7-560	0-8785389	-72684167	390
395	8-228	0-9152841	-64154145	7-513	0-8758136	-72708031	395
400	8-177	0-9125899	-64175201	7-467	0-8731229	-72731895	400
405	8-127	0-9099297	-64196258	7-421	0-8704662	-72755759	405
410	8-078	0-9073025	-64217314	7-376	0-8678428	-72779622	410
415	8-030	0-9047077	-64238370	7-332	0-8652513	-72803486	415
420	7-983	0-9021443	-64259426	7-289	0-8626915	-72827350	420
425	7-936	0-8996117	-64280483	7-247	0-8601624	-72851214	425
430	7-890	0-8971093	-64301539	7-206	0-8576635	-72875077	430
435	7-846	0-8946361	-64322595	7-165	0-8551940	-72898941	435
440	7-802	0-8921917	-64343651	7-125	0-8527531	-72922805	440
445	7-758	0-8897752	-64364708	7-085	0-8503402	-72946669	445
450	7-716	0-8873862	-64385764	7-046	0-8479546	-72970532	450



FOR SPECIAL INCLINATIONS AND VALUES OF (n).

Sine of Inclination (1 over)	$n = .020$			$n = .0225$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
205	9.275	0.9678285	.84472010	8.572	0.9331068	.95081011	205
210	9.165	0.9621417	.84500085	8.471	0.9279238	.95062596	210
215	9.059	0.9570780	.84528160	8.378	0.9228638	.95094180	215
220	8.956	0.9521818	.84556235	8.278	0.9179214	.95125765	220
225	8.857	0.9472978	.84584310	8.186	0.9130912	.95157349	225
230	8.761	0.9425710	.84612385	8.098	0.9083681	.95188938	230
235	8.669	0.9379468	.84640460	8.012	0.9037477	.95220518	235
240	8.579	0.9334210	.84668535	7.929	0.8992257	.95252102	240
245	8.492	0.9289894	.84696610	7.849	0.8947978	.95283686	245
250	8.407	0.9246482	.84724685	7.771	0.8904604	.95315271	250
255	8.325	0.9203941	.84752760	7.695	0.8862100	.95346855	255
260	8.246	0.9162234	.84780835	7.622	0.8820432	.95378440	260
265	8.168	0.9121330	.84808910	7.550	0.8779565	.95410024	265
270	8.093	0.9081199	.84836985	7.481	0.8739471	.95441608	270
275	8.020	0.9041812	.84865060	7.413	0.8700122	.95473193	275
280	7.949	0.9003144	.84893135	7.348	0.8661491	.95504777	280
285	7.880	0.8965169	.84921210	7.284	0.8623553	.95536361	285
290	7.812	0.8927861	.84949285	7.222	0.8586283	.95567946	290
295	7.747	0.8891199	.84977360	7.161	0.8549659	.95599530	295
300	7.683	0.8855161	.85005435	7.102	0.8513668	.95631115	300
305	7.620	0.8819726	.85033510	7.044	0.8478260	.95662699	305
310	7.559	0.8784874	.85061585	6.988	0.8443446	.95694283	310
315	7.500	0.8750588	.85089660	6.933	0.8409198	.95725868	315
320	7.442	0.8716849	.85117735	6.879	0.8375497	.95757452	320
325	7.385	0.8683640	.85145810	6.827	0.8342325	.95789036	325
330	7.330	0.8650945	.85173885	6.776	0.8309667	.95820621	330
335	7.276	0.8618749	.85201960	6.726	0.8277508	.95852205	335
340	7.223	0.8587037	.85230035	6.677	0.8245834	.95883790	340
345	7.171	0.8555794	.85258110	6.629	0.8214628	.95915374	345
350	7.120	0.8525006	.85286185	6.582	0.8183878	.95946958	350
355	7.071	0.8494662	.85314260	6.537	0.8153571	.95978543	355
360	7.022	0.8464748	.85342335	6.492	0.8123695	.96010127	360
365	6.975	0.8435254	.85370410	6.448	0.8094238	.96041711	365
370	6.928	0.8406168	.85398485	6.405	0.8065189	.96073296	370
375	6.883	0.8377478	.85426560	6.363	0.8036536	.96104880	375
380	6.838	0.8349174	.85454635	6.322	0.8008269	.96136465	380
385	6.794	0.8321246	.85482710	6.281	0.7980379	.96168049	385
390	6.751	0.8293683	.85510785	6.242	0.7952853	.96199633	390
395	6.709	0.8266478	.85538860	6.203	0.7925686	.96231218	395
400	6.667	0.8239620	.85566935	6.164	0.7898866	.96262802	400
405	6.627	0.8213103	.85595010	6.127	0.7872385	.96294386	405
410	6.587	0.8186916	.85623085	6.090	0.7846235	.96325971	410
415	6.548	0.8161052	.85651160	6.054	0.7820408	.96357555	415
420	6.510	0.8135503	.85679235	6.019	0.7794897	.96389140	420
425	6.472	0.8110261	.85707310	5.984	0.7769692	.96420724	425
430	6.435	0.8085321	.85735385	5.949	0.7744789	.96452308	430
435	6.398	0.8060674	.85763460	5.916	0.7720179	.96483893	435
440	6.363	0.8036313	.85791535	5.883	0.7695856	.96515477	440
445	6.327	0.8012233	.85819610	5.850	0.7671813	.96547061	445
450	6.293	0.7988427	.85847645	5.818	0.7648045	.96578646	450

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	8·010	0·9086449	1·0559001	7·550	0·8779582	1·1614901	205
210	7·915	0·8984658	1·0562511	7·461	0·8727819	1·1618762	210
215	7·824	0·8934089	1·0566020	7·374	0·8677287	1·1622622	215
220	7·735	0·8884699	1·0569529	7·291	0·8627980	1·1626482	220
225	7·650	0·8836481	1·0573039	7·211	0·8579695	1·1630348	225
230	7·567	0·8789236	1·0576548	7·138	0·8532532	1·1634208	230
235	7·487	0·8743067	1·0580058	7·057	0·8486395	1·1638068	235
240	7·409	0·8697881	1·0583567	6·984	0·8441242	1·1641924	240
245	7·334	0·8653637	1·0587076	6·914	0·8397030	1·1645784	245
250	7·262	0·8610298	1·0590586	6·845	0·8353728	1·1649644	250
255	7·191	0·8567829	1·0594095	6·778	0·8311286	1·1653505	255
260	7·122	0·8526194	1·0597604	6·714	0·8269685	1·1657365	260
265	7·056	0·8485362	1·0601114	6·651	0·8228885	1·1661225	265
270	6·991	0·8445303	1·0604628	6·590	0·8188858	1·1665085	270
275	6·928	0·8405989	1·0608183	6·531	0·8149576	1·1668946	275
280	6·867	0·8367393	1·0611642	6·473	0·8111013	1·1672806	280
285	6·807	0·8329490	1·0615151	6·417	0·8078141	1·1676666	285
290	6·749	0·8292254	1·0618661	6·362	0·8035938	1·1680527	290
295	6·692	0·8255665	1·0622170	6·309	0·7999381	1·1684387	295
300	6·637	0·8219699	1·0625679	6·257	0·7963448	1·1688247	300
305	6·583	0·8184336	1·0629189	6·206	0·7928117	1·1692108	305
310	6·531	0·8149557	1·0632698	6·157	0·7893370	1·1695968	310
315	6·479	0·8115343	1·0636208	6·108	0·7859188	1·1699828	315
320	6·429	0·8081676	1·0639717	6·061	0·7825553	1·1703689	320
325	6·380	0·8048539	1·0643226	6·015	0·7792448	1·1707549	325
330	6·333	0·8015916	1·0646736	5·970	0·7759858	1·1711409	330
335	6·286	0·7983792	1·0650245	5·926	0·7727766	1·1715270	335
340	6·240	0·7952152	1·0653754	5·883	0·7696158	1·1719130	340
345	6·196	0·7920981	1·0657264	5·841	0·7665019	1·1722990	345
350	6·152	0·7890265	1·0660773	5·800	0·7634336	1·1726850	350
355	6·109	0·7859993	1·0664283	5·760	0·7604095	1·1730711	355
360	6·068	0·7830152	1·0667792	5·720	0·7574286	1·1734571	360
365	6·027	0·7800729	1·0671301	5·682	0·7544895	1·1738431	365
370	5·986	0·7771715	1·0674811	5·644	0·7515913	1·1742292	370
375	5·947	0·7743097	1·0678320	5·607	0·7487827	1·1746152	375
380	5·909	0·7714864	1·0681829	5·571	0·7459127	1·1750012	380
385	5·871	0·7687007	1·0685339	5·535	0·7431302	1·1753873	385
390	5·834	0·7659517	1·0688848	5·500	0·7403845	1·1757733	390
395	5·797	0·7632385	1·0692358	5·466	0·7376744	1·1761593	395
400	5·762	0·7605599	1·0695867	5·433	0·7349990	1·1765454	400
405	5·727	0·7579153	1·0699376	5·400	0·7323576	1·1769314	405
410	5·693	0·7553038	1·0702886	5·367	0·7297493	1·1773174	410
415	5·659	0·7527246	1·0706395	5·335	0·7271733	1·1777035	415
420	5·626	0·7501768	1·0709904	5·304	0·7246288	1·1780895	420
425	5·593	0·7476598	1·0713414	5·274	0·7221150	1·1784755	425
430	5·561	0·7451730	1·0716923	5·244	0·7196314	1·1788615	430
435	5·530	0·7427155	1·0720433	5·214	0·7171770	1·1792476	435
440	5·499	0·7402866	1·0723942	5·185	0·7147514	1·1796336	440
445	5·469	0·7378857	1·0727451	5·156	0·7123537	1·1800196	445
450	5·439	0·7355123	1·0730961	5·128	0·7099835	1·1804057	450

Sine of Inclina- tion (1 over)	$n = .030$			$n = .035$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
205	7.167	0.8558276	1.2670802	6.564	0.8171961	1.4782602	205
210	7.082	0.8501548	1.2675018	6.487	0.8120288	1.4787515	210
215	7.000	0.8451041	1.2679224	6.412	0.8069886	1.4792428	215
220	6.921	0.8401718	1.2683435	6.340	0.8020568	1.4797841	220
225	6.845	0.8353508	1.2687647	6.270	0.7972412	1.4802254	225
230	6.771	0.8306875	1.2691858	6.202	0.7925338	1.4807167	230
235	6.699	0.8260269	1.2696069	6.137	0.7879281	1.4812081	235
240	6.630	0.8215146	1.2700280	6.078	0.7834212	1.4816994	240
245	6.563	0.8170964	1.2704492	6.012	0.7790085	1.4821907	245
250	6.498	0.8127688	1.2708708	5.952	0.7746868	1.4826820	250
255	6.435	0.8085281	1.2712914	5.895	0.7704511	1.4831738	255
260	6.373	0.8043709	1.2717125	5.838	0.7662998	1.4836646	260
265	6.314	0.8002940	1.2721337	5.784	0.7622278	1.4841559	265
270	6.256	0.7962942	1.2725548	5.731	0.7582335	1.4846472	270
275	6.200	0.7923691	1.2729759	5.680	0.7543187	1.4851386	275
280	6.145	0.7885158	1.2733970	5.629	0.7504659	1.4856299	280
285	6.092	0.7847316	1.2738182	5.581	0.7466872	1.4861212	285
290	6.040	0.7810143	1.2742398	5.533	0.7429753	1.4866125	290
295	5.989	0.7773616	1.2746604	5.487	0.7393280	1.4871038	295
300	5.940	0.7737718	1.2750815	5.442	0.7357481	1.4875951	300
305	5.892	0.7702412	1.2755027	5.398	0.7322185	1.4880864	305
310	5.845	0.7667694	1.2759238	5.355	0.7287522	1.4885777	310
315	5.799	0.7633542	1.2763449	5.313	0.7253424	1.4890691	315
320	5.754	0.7599988	1.2767660	5.272	0.7219873	1.4895604	320
325	5.711	0.7566864	1.2771872	5.232	0.7186853	1.4900517	325
330	5.668	0.7534302	1.2776083	5.193	0.7154346	1.4905430	330
335	5.626	0.7502241	1.2780294	5.155	0.7122338	1.4910343	335
340	5.586	0.7470663	1.2784505	5.118	0.7090814	1.4915256	340
345	5.546	0.7439553	1.2788717	5.081	0.7059760	1.4920169	345
350	5.507	0.7408900	1.2792928	5.046	0.7029160	1.4925082	350
355	5.469	0.7378690	1.2797139	5.011	0.6999004	1.4929996	355
360	5.431	0.7348911	1.2801350	4.977	0.6969279	1.4934909	360
365	5.395	0.7319550	1.2805562	4.943	0.6939972	1.4939822	365
370	5.359	0.7290598	1.2809773	4.910	0.6911074	1.4944735	370
375	5.324	0.7262042	1.2813984	4.878	0.6882572	1.4949648	375
380	5.289	0.7233871	1.2818195	4.847	0.6854457	1.4954561	380
385	5.255	0.7206076	1.2822407	4.816	0.6826716	1.4959474	385
390	5.222	0.7178649	1.2826618	4.786	0.6799341	1.4964387	390
395	5.190	0.7151578	1.2830829	4.756	0.6772324	1.4969301	395
400	5.158	0.7124854	1.2835040	4.727	0.6745654	1.4974214	400
405	5.127	0.7098470	1.2839252	4.698	0.6719323	1.4979127	405
410	5.096	0.7072416	1.2843463	4.670	0.6693324	1.4984040	410
415	5.066	0.7046686	1.2847674	4.643	0.6667648	1.4988953	415
420	5.036	0.7021270	1.2851885	4.616	0.6642286	1.4993866	420
425	5.007	0.6996162	1.2856097	4.589	0.6617232	1.4998779	425
430	4.979	0.6971356	1.2861308	4.563	0.6592478	1.5003692	430
435	4.951	0.6946842	1.2865519	4.537	0.6568020	1.5008606	435
440	4.923	0.6922616	1.2869730	4.512	0.6543847	1.5013519	440
445	4.896	0.6898669	1.2873942	4.487	0.6519954	1.5018432	445
450	4.870	0.6874996	1.2877153	4.463	0.6496335	1.5023345	450

Sine of Inclina- tion (1 over)	n = .050			Sine of Inclina- tion (1 over)	n = .009		
	N	log. N	D		N	log. N	D
205	5.480	0.7387853	2.1118008	455	11.448	1.0587332	.38644092
210	5.415	0.7386903	2.1125021	460	11.386	1.0563849	.38656726
215	5.353	0.7285983	2.1182040	465	11.326	1.0540623	.38669360
220	5.293	0.7236839	2.1189059	470	11.266	1.0517649	.38681993
225	5.235	0.7188817	2.1146078	475	11.207	1.0494920	.38694627
230	5.178	0.7141866	2.1153096	480	11.149	1.0472482	.38707261
235	5.124	0.7095942	2.1160115	485	11.092	1.0450177	.38719895
240	5.071	0.7051001	2.1167184	490	11.036	1.0428156	.38732528
245	5.020	0.7007002	2.1174153	495	10.981	1.0406360	.38745162
250	4.970	0.6963908	2.1181171	500	10.926	1.0384785	.38757796
255	4.922	0.6921683	2.1188190	505	10.873	1.0363428	.38770430
260	4.876	0.6880294	2.1195209	510	10.820	1.0342283	.38783063
265	4.830	0.6839707	2.1202228	515	10.768	1.0321347	.38795697
270	4.786	0.6799892	2.1209246	520	10.717	1.0300615	.38808331
275	4.743	0.6760822	2.1216265	525	10.666	1.0280084	.38820965
280	4.702	0.6722471	2.1223284	530	10.616	1.0259752	.38833598
285	4.661	0.6684812	2.1230303	535	10.567	1.0239618	.38846232
290	4.621	0.6647821	2.1237321	540	10.519	1.0219663	.38858866
295	4.583	0.6611475	2.1244340	545	10.471	1.0199898	.38871500
300	4.545	0.6575753	2.1251359	550	10.424	1.0180316	.38884133
305	4.509	0.6540635	2.1258378	555	10.377	1.0160914	.38896767
310	4.478	0.6506099	2.1265396	560	10.332	1.0141689	.38909401
315	4.438	0.6472129	2.1272415	565	10.286	1.0122686	.38922035
320	4.404	0.6438706	2.1279434	570	10.242	1.0103753	.38934668
325	4.371	0.6405812	2.1286453	575	10.198	1.0085037	.38947302
330	4.339	0.6373433	2.1293471	580	10.154	1.0066485	.38959936
335	4.307	0.6341552	2.1300490	585	10.111	1.0048095	.38972570
340	4.276	0.6310155	2.1307509	590	10.069	1.0029863	.38985203
345	4.245	0.6279228	2.1314528	595	10.027	1.0011787	.38997837
350	4.216	0.6248756	2.1321546	600	9.986	0.9993866	.39010471
355	4.187	0.6218727	2.1328565	605	9.945	0.9976095	.39023105
360	4.158	0.6189129	2.1335584	610	9.905	0.9958472	.39035738
365	4.130	0.6159949	2.1342603	615	9.865	0.9940995	.39048372
370	4.103	0.6131178	2.1349621	620	9.826	0.9923661	.39061006
375	4.076	0.6102803	2.1356640	625	9.787	0.9906469	.39073640
380	4.050	0.6074814	2.1363659	630	9.749	0.9889416	.39086273
385	4.025	0.6047200	2.1370678	635	9.711	0.9872499	.39098907
390	3.999	0.6019952	2.1377696	640	9.673	0.9855716	.39111541
395	3.975	0.5993062	2.1384715	645	9.636	0.9839066	.39124175
400	3.950	0.5966519	2.1391734	650	9.600	0.9822547	.39136808
405	3.926	0.5940315	2.1398753	655	9.563	0.9806156	.39149442
410	3.903	0.5914442	2.1405771	660	9.528	0.9789892	.39162076
415	3.881	0.5888893	2.1412790	665	9.492	0.9773753	.39174710
420	3.858	0.5863658	2.1419809	670	9.457	0.9757736	.39187343
425	3.836	0.5838730	2.1426828	675	9.423	0.9741841	.39199977
430	3.814	0.5814104	2.1433846	680	9.389	0.9726064	.39212611
435	3.793	0.5789771	2.1440865	685	9.355	0.9710405	.39225245
440	3.772	0.5765724	2.1447884	690	9.322	0.9694862	.39237878
445	3.751	0.5741958	2.1454903	695	9.289	0.9679432	.39250512
450	3.731	0.5718465	2.1461921	700	9.256	0.9664115	.39263146

Sine of Inclina- tion (1 over)	<i>n</i> = .010			<i>n</i> = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	10.505	1.0218787	.42987880	9.788	0.9882295	.47281668	455
460	10.448	1.0190827	.42951918	9.680	0.9858857	.47247109	460
465	10.892	1.0167128	.42965955	9.629	0.9885674	.47262551	465
470	10.838	1.0144171	.42979998	9.578	0.9812744	.47277992	470
475	10.284	1.0121464	.42994080	9.528	0.9790058	.47298483	475
480	10.281	1.0098998	.48008068	9.479	0.9767614	.47808874	480
485	10.178	1.0076767	.48022105	9.481	0.9745405	.47824816	485
490	10.127	1.0054768	.48036148	9.888	0.9728427	.47839757	490
495	10.076	1.0082994	.48050180	9.886	0.9701674	.47855198	495
500	10.026	1.0011442	.48064218	9.290	0.9680142	.47870639	500
505	9.977	0.9990107	.48078255	9.244	0.9658829	.47886081	505
510	9.929	0.9968985	.48092298	9.200	0.9637780	.47401522	510
515	9.881	0.9948072	.48106380	9.155	0.9616838	.47416968	515
520	9.884	0.9927368	.48120368	9.112	0.9596150	.47432404	520
525	9.788	0.9906854	.48134405	9.069	0.9575664	.47447846	525
530	9.742	0.9886544	.48148448	9.027	0.9555876	.47463287	530
535	9.697	0.9866427	.48162480	8.985	0.9535280	.47478728	535
540	9.653	0.9846498	.48176518	8.944	0.9515378	.47494169	540
545	9.609	0.9826756	.48190555	8.904	0.9495652	.47509611	545
550	9.566	0.9807197	.48204598	8.864	0.9476115	.47525052	550
555	9.523	0.9787817	.48218630	8.824	0.9456757	.47540498	555
560	9.481	0.9768614	.48232668	8.785	0.9437575	.47555934	560
565	9.440	0.9749588	.48246705	8.747	0.9418566	.47571376	565
570	9.399	0.9730723	.48260748	8.709	0.9399727	.47586817	570
575	9.358	0.9712080	.48274780	8.672	0.9381055	.47602258	575
580	9.319	0.9693501	.48288818	8.635	0.9362548	.47617699	580
585	9.279	0.9675132	.48302855	8.599	0.9344201	.47633141	585
590	9.240	0.9656923	.48316898	8.563	0.9326018	.47648582	590
595	9.202	0.9638871	.48330930	8.527	0.9307982	.47664023	595
600	9.164	0.9620971	.48344968	8.492	0.9290104	.47679464	600
605	9.127	0.9603222	.48359005	8.457	0.9272378	.47694906	605
610	9.090	0.9585621	.48373043	8.423	0.9254797	.47710347	610
615	9.053	0.9568165	.48387080	8.389	0.9237363	.47725788	615
620	9.017	0.9550854	.48401118	8.356	0.9220078	.47741229	620
625	8.982	0.9533685	.48415155	8.323	0.9202925	.47756671	625
630	8.947	0.9516654	.48429193	8.291	0.9185917	.47772112	630
635	8.912	0.9499750	.48443230	8.259	0.9169048	.47787553	635
640	8.878	0.9482999	.48457268	8.227	0.9152304	.47802994	640
645	8.844	0.9466372	.48471305	8.195	0.9135698	.47818436	645
650	8.810	0.9449875	.48485343	8.164	0.9119223	.47833877	650
655	8.777	0.9433507	.48499380	8.132	0.9101876	.47849318	655
660	8.744	0.9417265	.48513418	8.103	0.9086655	.47864759	660
665	8.712	0.9401148	.48527455	8.078	0.9070560	.47880201	665
670	8.680	0.9385153	.48541498	8.044	0.9054587	.47895642	670
675	8.648	0.9369279	.48555530	8.014	0.9038735	.47911083	675
680	8.617	0.9353525	.48569568	7.985	0.9023002	.47926524	680
685	8.586	0.9337888	.48583605	7.957	0.9007386	.47941966	685
690	8.555	0.9322368	.48597643	7.928	0.8991887	.47957407	690
695	8.525	0.9306960	.48611680	7.900	0.8976501	.47972848	695
700	8.495	0.9291665	.48625718	7.878	0.8961228	.47988289	700

Sine of Inclina- tion (1 over)	n = .012			n = .013			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	9·089	0·9585809	·51525456	8·545	0·9817108	·55819244	455
460	9·040	0·9561892	·51542801	8·499	0·9298711	·55887498	460
465	8·992	0·9538730	·51559146	8·454	0·9270569	·55855742	465
470	8·945	0·9515820	·51575991	8·409	0·9247679	·55878990	470
475	8·899	0·9498156	·51592886	8·366	0·9225085	·55892289	475
480	8·853	0·9470782	·51609681	8·323	0·9202682	·55910488	480
485	8·808	0·9448544	·51626526	8·280	0·9180464	·55928787	485
490	8·763	0·9426588	·51643371	8·239	0·9158526	·55946985	490
495	8·719	0·9404856	·51660216	8·197	0·9136814	·55965284	495
500	8·676	0·9388346	·51677061	8·157	0·9115824	·55983483	500
505	8·634	0·9362058	·51693906	8·117	0·9094051	·56001782	505
510	8·592	0·9340973	·51710751	8·078	0·9072992	·56019980	510
515	8·551	0·9320102	·51727596	8·039	0·9052141	·56038229	515
520	8·510	0·9299435	·51744441	8·001	0·9031494	·56056478	520
525	8·470	0·9278969	·51761286	7·964	0·9011048	·56074727	525
530	8·431	0·9258701	·51778181	7·926	0·8990900	·56092975	530
535	8·392	0·9238626	·51794976	7·890	0·8970745	·56111224	535
540	8·354	0·9218740	·51811821	7·854	0·8950879	·56129478	540
545	8·316	0·9199040	·51828666	7·818	0·8931199	·56147722	545
550	8·279	0·9179523	·51845511	7·783	0·8911702	·56165970	550
555	8·242	0·9160185	·51862356	7·749	0·8892384	·56184219	555
560	8·205	0·9141024	·51879201	7·715	0·8873243	·56202468	560
565	8·170	0·9122036	·51896046	7·681	0·8854275	·56220717	565
570	8·134	0·9103219	·51912891	7·648	0·8835477	·56238965	570
575	8·099	0·9084568	·51929736	7·615	0·8816846	·56257214	575
580	8·065	0·9066081	·51946581	7·583	0·8798879	·56275463	580
585	8·031	0·9047754	·51963426	7·551	0·8780073	·56293712	585
590	7·998	0·9029587	·51980271	7·520	0·8761926	·56311960	590
595	7·964	0·9011577	·51997116	7·488	0·8743985	·56330209	595
600	7·932	0·8993720	·52013961	7·458	0·8726098	·56348458	600
605	7·900	0·8976014	·52030806	7·427	0·8708412	·56366707	605
610	7·868	0·8958454	·52047651	7·398	0·8690872	·56384955	610
615	7·836	0·8941041	·52064496	7·368	0·8673479	·56403204	615
620	7·805	0·8923772	·52081341	7·339	0·8656280	·56421453	620
625	7·774	0·8906645	·52098186	7·310	0·8639122	·56439702	625
630	7·744	0·8889656	·52115031	7·281	0·8622154	·56457950	630
635	7·714	0·8872805	·52131876	7·253	0·8605322	·56476199	635
640	7·684	0·8856086	·52148721	7·225	0·8588623	·56494448	640
645	7·655	0·8839500	·52165566	7·198	0·8572057	·56512697	645
650	7·626	0·8823046	·52182411	7·171	0·8555623	·56530945	650
655	7·598	0·8806719	·52199256	7·144	0·8539316	·56549194	655
660	7·569	0·8790519	·52216101	7·117	0·8523187	·56567443	660
665	7·541	0·8774444	·52232946	7·091	0·8507082	·56585692	665
670	7·514	0·8758491	·52249791	7·065	0·8491150	·56603940	670
675	7·486	0·8742659	·52266636	7·039	0·8475338	·56622189	675
680	7·459	0·8726947	·52283481	7·014	0·8459645	·56640438	680
685	7·433	0·8711853	·52300326	6·989	0·8444071	·56658687	685
690	7·406	0·8696874	·52317171	6·964	0·8428612	·56676935	690
695	7·380	0·8680509	·52334016	6·939	0·8413266	·56695184	695
700	7·354	0·8665257	·52350861	6·915	0·8398033	·56713433	700

Sine of Inclina- tion (1 over)	$n = \cdot 014$			$n = \cdot 015$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	8·078	0·9078255	·60118082	7·674	0·8850240	·64406820	455
460	8·085	0·9049876	·60182685	7·683	0·8826880	·64427876	460
465	7·992	0·9026754	·60152387	7·592	0·8803777	·64448933	465
470	7·950	0·9008884	·60171990	7·553	0·8780925	·64469989	470
475	7·909	0·8981259	·60191642	7·518	0·8758819	·64491045	475
480	7·868	0·8958876	·60211295	7·475	0·8735954	·64512101	480
485	7·828	0·8936726	·60230947	7·437	0·8713823	·64533158	485
490	7·789	0·8914808	·60250600	7·399	0·8691923	·64554214	490
495	7·750	0·8893115	·60270252	7·362	0·8670250	·64575270	495
500	7·712	0·8871645	·60289905	7·326	0·8648798	·64596326	500
505	7·674	0·8850391	·60309557	7·291	0·8627563	·64617383	505
510	7·637	0·8829351	·60329210	7·255	0·8606541	·64638439	510
515	7·601	0·8808520	·60348862	7·221	0·8585728	·64659495	515
520	7·565	0·8787892	·60368515	7·186	0·8565119	·64680551	520
525	7·529	0·8767465	·60388167	7·153	0·8544711	·64701608	525
530	7·494	0·8747236	·60407820	7·120	0·8524501	·64722664	530
535	7·460	0·8727200	·60427472	7·087	0·8504484	·64743720	535
540	7·426	0·8707854	·60447125	7·054	0·8484656	·64764776	540
545	7·392	0·8687693	·60466777	7·023	0·8465014	·64785833	545
550	7·359	0·8668215	·60486430	6·991	0·8445555	·64806889	550
555	7·326	0·8648917	·60506082	6·960	0·8426275	·64827945	555
560	7·294	0·8629795	·60525735	6·930	0·8407171	·64849001	560
565	7·262	0·8610846	·60545387	6·900	0·8388241	·64870058	565
570	7·231	0·8592067	·60565040	6·870	0·8369481	·64891114	570
575	7·200	0·8573456	·60584692	6·841	0·8350888	·64912170	575
580	7·170	0·8555008	·60604345	6·812	0·8332459	·64933226	580
585	7·140	0·8536721	·60623997	6·783	0·8314190	·64954283	585
590	7·110	0·8518593	·60643650	6·755	0·8296081	·64975339	590
595	7·080	0·8500622	·60663302	6·727	0·8278128	·64996395	595
600	7·051	0·8482804	·60682955	6·699	0·8260329	·65017451	600
605	7·023	0·8465137	·60702607	6·672	0·8242680	·65038508	605
610	6·995	0·8447616	·60722260	6·645	0·8225179	·65059564	610
615	6·966	0·8430242	·60741912	6·619	0·8207823	·65080620	615
620	6·939	0·8413012	·60761565	6·593	0·8190612	·65101676	620
625	6·912	0·8395924	·60781217	6·567	0·8173542	·65122733	625
630	6·885	0·8378975	·60800870	6·541	0·8156611	·65143789	630
635	6·858	0·8362162	·60820522	6·516	0·8139816	·65164845	635
640	6·832	0·8345482	·60840175	6·491	0·8123155	·65185901	640
645	6·806	0·8328936	·60859827	6·466	0·8106628	·65206958	645
650	6·780	0·8312512	·60879480	6·442	0·8090231	·65228014	650
655	6·755	0·8296234	·60899132	6·418	0·8073962	·65249070	655
660	6·730	0·8280073	·60918785	6·394	0·8057820	·65270126	660
665	6·705	0·8264038	·60938437	6·371	0·8041803	·65291183	665
670	6·681	0·8248124	·60958090	6·347	0·8025908	·65312239	670
675	6·656	0·8232332	·60977742	6·324	0·8010134	·65333295	675
680	6·632	0·8216659	·60997395	6·302	0·7994479	·65354351	680
685	6·609	0·8201103	·61017047	6·279	0·7978942	·65375408	685
690	6·585	0·8185663	·61036700	6·257	0·7963521	·65396464	690
695	6·562	0·8170336	·61056352	6·235	0·7948213	·65417520	695
700	6·539	0·8155123	·61076005	6·213	0·7933018	·65438576	700

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	7.008	0.8455960	.72994896	6.259	0.7964890	.85875760	455
460	6.970	0.8432636	.78018260	6.225	0.7941614	.85908885	460
465	6.934	0.8409568	.78042124	6.192	0.7918595	.85981910	465
470	6.897	0.8386751	.78065987	6.160	0.7895827	.85959985	470
475	6.861	0.8364180	.78089851	6.128	0.7873305	.85988060	475
480	6.826	0.8341849	.78118715	6.097	0.7851023	.86016185	480
485	6.792	0.8319754	.78187579	6.066	0.7828976	.86044210	485
490	6.758	0.8297891	.78161442	6.036	0.7807162	.86072285	490
495	6.724	0.8276258	.78185806	6.006	0.7785572	.86100860	495
500	6.691	0.8254886	.78209170	5.976	0.7764204	.86128485	500
505	6.658	0.8233687	.782383084	5.947	0.7743054	.86156510	505
510	6.626	0.8212650	.78256697	5.918	0.7722116	.86184585	510
515	6.595	0.8191872	.78280761	5.890	0.7701887	.86212660	515
520	6.563	0.8171299	.78304625	5.863	0.7680862	.86240785	520
525	6.533	0.8150926	.78328489	5.835	0.7660538	.86268810	525
530	6.502	0.8130751	.78352352	5.808	0.7640412	.86296885	530
535	6.473	0.8110769	.78376216	5.782	0.7620479	.86324960	535
540	6.443	0.8090976	.78400080	5.755	0.7600735	.86353035	540
545	6.414	0.8071869	.78423944	5.730	0.7581176	.86381110	545
550	6.385	0.8051946	.78447807	5.704	0.7561801	.86409185	550
555	6.357	0.8032701	.78471671	5.679	0.7542605	.86437260	555
560	6.329	0.8013633	.78495535	5.654	0.7523586	.86465335	560
565	6.302	0.7994738	.78519399	5.630	0.7504739	.86493410	565
570	6.275	0.7976013	.78543262	5.605	0.7486062	.86521485	570
575	6.248	0.7957455	.78567126	5.582	0.7467553	.86549560	575
580	6.222	0.7939061	.78590990	5.558	0.7449208	.86577685	580
585	6.196	0.7920827	.78614854	5.535	0.7431023	.86605710	585
590	6.170	0.7902753	.78638717	5.512	0.7412997	.86633835	590
595	6.144	0.7884836	.78662581	5.489	0.7395128	.86661860	595
600	6.119	0.7867072	.78686445	5.467	0.7377413	.86689935	600
605	6.095	0.7849459	.78710309	5.445	0.7359849	.86718010	605
610	6.070	0.7831993	.78734173	5.423	0.7342431	.86746085	610
615	6.046	0.7814672	.78758036	5.402	0.7325158	.86774160	615
620	6.022	0.7797496	.78781900	5.380	0.7308081	.86802235	620
625	5.999	0.7780461	.78805764	5.359	0.7291045	.86830810	625
630	5.975	0.7763566	.78829627	5.339	0.7274198	.86858885	630
635	5.952	0.7746806	.78853491	5.318	0.7257487	.86886460	635
640	5.929	0.7730180	.78877355	5.298	0.7240910	.86914535	640
645	5.907	0.7713688	.78901219	5.278	0.7224465	.86942610	645
650	5.885	0.7697326	.78925082	5.258	0.7208152	.86970685	650
655	5.863	0.7681092	.78948946	5.238	0.7191967	.86998760	655
660	5.841	0.7764985	.78942810	5.219	0.7175909	.87026835	660
665	5.820	0.7649004	.78996674	5.200	0.7159975	.87054910	665
670	5.798	0.7633145	.74020537	5.181	0.7144164	.87082985	670
675	5.778	0.7617406	.74044401	5.162	0.7128473	.87111060	675
680	5.757	0.7601786	.74068265	5.144	0.7112902	.87139135	680
685	5.736	0.7586284	.74092129	5.126	0.7097449	.87167210	685
690	5.716	0.7570898	.74115992	5.108	0.7082111	.87195285	690
695	5.696	0.7555625	.74139856	5.090	0.7066886	.87223360	695
700	5.676	0.7540464	.74163720	5.072	0.7051774	.87251435	700

Sine of Inclina- tion (1 over)	$n = \cdot 0225$			$n = \cdot 0250$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	5·787	0·7624544	·96610280	5·410	0·7831657	1·0734470	455
460	5·756	0·7601806	·96641815	5·381	0·7808453	1·0737979	460
465	5·726	0·7578824	·96673899	5·352	0·7285506	1·0741489	465
470	5·696	0·7555594	·96704983	5·325	0·7262810	1·0744998	470
475	5·666	0·7533108	·96736568	5·297	0·7240859	1·0748508	475
480	5·637	0·7510865	·96768152	5·270	0·7218150	1·0752017	480
485	5·609	0·7488856	·96799736	5·243	0·7196175	1·0755526	485
490	5·581	0·7467077	·96831321	5·217	0·7174431	1·0759036	490
495	5·553	0·7445524	·96862905	5·191	0·7152913	1·0762545	495
500	5·526	0·7424194	·96894490	5·166	0·7131617	1·0766054	500
505	5·499	0·7403080	·96926074	5·141	0·7110537	1·0769564	505
510	5·473	0·7382179	·96957658	5·116	0·7089671	1·0773073	510
515	5·447	0·7361488	·96989243	5·092	0·7069014	1·0776583	515
520	5·421	0·7341000	·97020827	5·068	0·7048560	1·0780092	520
525	5·396	0·7320713	·97052411	5·045	0·7028307	1·0783601	525
530	5·371	0·7300624	·97083996	5·021	0·7008253	1·0787111	530
535	5·347	0·7280728	·97115580	4·998	0·6988391	1·0790620	535
540	5·322	0·7261021	·97147165	4·976	0·6968719	1·0794129	540
545	5·298	0·7241500	·97178749	4·954	0·6949232	1·0797639	545
550	5·275	0·7222162	·97210333	4·932	0·6929928	1·0801148	550
555	5·252	0·7203003	·97241918	4·910	0·6910803	1·0804658	555
560	5·229	0·7184021	·97273502	4·889	0·6891855	1·0808167	560
565	5·206	0·7165211	·97305086	4·868	0·6873080	1·0811676	565
570	5·184	0·7146571	·97336671	4·847	0·6854475	1·0815186	570
575	5·162	0·7128099	·97368255	4·826	0·6836036	1·0818695	575
580	5·140	0·7109791	·97399840	4·806	0·6817762	1·0822204	580
585	5·119	0·7091643	·97431424	4·786	0·6799649	1·0825714	585
590	5·098	0·7073654	·97463008	4·766	0·6781695	1·0829223	590
595	5·077	0·7055823	·97494593	4·747	0·6763897	1·0832733	595
600	5·056	0·7038144	·97526177	4·727	0·6746253	1·0836242	600
605	5·036	0·7020616	·97557761	4·708	0·6728760	1·0839751	605
610	5·016	0·7003236	·97589346	4·690	0·6711413	1·0843261	610
615	4·996	0·6986001	·97620930	4·671	0·6694212	1·0846770	615
620	4·976	0·6968910	·97652515	4·653	0·6677155	1·0850279	620
625	4·957	0·6951961	·97684099	4·635	0·6660240	1·0853789	625
630	4·938	0·6935151	·97715683	4·617	0·6643464	1·0857298	630
635	4·919	0·6918476	·97747268	4·599	0·6626824	1·0860808	635
640	4·900	0·6901937	·97778852	4·582	0·6610319	1·0864317	640
645	4·881	0·6885529	·97810436	4·565	0·6593946	1·0867826	645
650	4·863	0·6869253	·97842021	4·547	0·6577704	1·0871336	650
655	4·845	0·6853104	·97873605	4·531	0·6561589	1·0874845	655
660	4·827	0·6837083	·97905190	4·514	0·6545602	1·0878354	660
665	4·810	0·6821186	·97936774	4·498	0·6529739	1·0881864	665
670	4·792	0·6805412	·97968358	4·481	0·6513999	1·0885373	670
675	4·775	0·6789759	·97999943	4·465	0·6498380	1·0888883	675
680	4·758	0·6774224	·98031527	4·449	0·6482879	1·0892392	680
685	4·741	0·6758807	·98063111	4·434	0·6467496	1·0895901	685
690	4·724	0·6743507	·98094696	4·418	0·6452230	1·0899411	690
695	4·708	0·6728319	·98126280	4·403	0·6437076	1·0902920	695
700	4·692	0·6713244	·98157865	4·387	0·6422036	1·0906429	700

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
455	5.101	0.7076401	1.1807917	4.843	0.6851592	1.2881864	455
460	5.074	0.7053229	1.1811777	4.818	0.6828450	1.2885575	460
465	5.047	0.7030813	1.1815688	4.792	0.6805565	1.2889787	465
470	5.021	0.7007649	1.1819498	4.768	0.6782981	1.2893998	470
475	4.995	0.6985280	1.1823358	4.743	0.6760541	1.2898209	475
480	4.969	0.6963053	1.1827219	4.719	0.6738393	1.2902420	480
485	4.944	0.6941110	1.1831079	4.695	0.6716480	1.2906632	485
490	4.920	0.6919398	1.1834939	4.672	0.6694797	1.2910843	490
495	4.895	0.6897912	1.1838800	4.649	0.6673841	1.2915054	495
500	4.872	0.6876648	1.1842660	4.626	0.6652107	1.2919265	500
505	4.848	0.6855600	1.1846520	4.604	0.6631089	1.2923477	505
510	4.825	0.6834766	1.1850380	4.582	0.6610284	1.2927688	510
515	4.802	0.6814140	1.1854241	4.560	0.6589688	1.2931899	515
520	4.779	0.6793719	1.1858101	4.539	0.6569297	1.2936110	520
525	4.757	0.6773498	1.1861961	4.518	0.6549106	1.2940322	525
530	4.735	0.6753476	1.1865822	4.497	0.6529113	1.2944533	530
535	4.714	0.6733646	1.1869682	4.476	0.6509313	1.2948744	535
540	4.692	0.6714005	1.1873542	4.456	0.6489701	1.2952955	540
545	4.671	0.6694550	1.1877403	4.436	0.6470276	1.2957167	545
550	4.651	0.6675278	1.1881263	4.417	0.6451033	1.2961378	550
555	4.630	0.6656184	1.1885123	4.397	0.6431970	1.2965589	555
560	4.610	0.6637268	1.1888984	4.378	0.6413084	1.2969800	560
565	4.590	0.6618525	1.1892844	4.360	0.6394370	1.2974012	565
570	4.571	0.6599952	1.1896704	4.341	0.6375826	1.2978223	570
575	4.552	0.6581545	1.1900565	4.323	0.6357449	1.2982434	575
580	4.532	0.6563303	1.1904425	4.305	0.6339236	1.2986645	580
585	4.514	0.6545221	1.1908285	4.287	0.6321184	1.2990857	585
590	4.495	0.6527299	1.1912145	4.269	0.6303291	1.2995068	590
595	4.477	0.6509533	1.1916006	4.252	0.6285555	1.2999279	595
600	4.459	0.6491921	1.1919866	4.234	0.6267972	1.3003490	600
605	4.441	0.6474459	1.1923726	4.217	0.6250540	1.3007702	605
610	4.423	0.6457144	1.1927587	4.201	0.6233254	1.3011913	610
615	4.406	0.6439975	1.1931447	4.184	0.6216115	1.3016124	615
620	4.388	0.6422950	1.1935307	4.168	0.6199119	1.3020335	620
625	4.371	0.6406067	1.1939168	4.152	0.6182265	1.3024547	625
630	4.354	0.6389323	1.1943028	4.136	0.6165551	1.3028758	630
635	4.338	0.6372714	1.1946888	4.120	0.6148972	1.3032969	635
640	4.321	0.6356240	1.1950749	4.104	0.6132528	1.3037180	640
645	4.305	0.6339899	1.1954609	4.089	0.6116216	1.3041392	645
650	4.289	0.6323688	1.1958469	4.074	0.6100035	1.3045603	650
655	4.273	0.6307605	1.1962330	4.059	0.6083981	1.3049814	655
660	4.258	0.6291650	1.1966190	4.044	0.6068055	1.3054025	660
665	4.242	0.6275819	1.1970050	4.029	0.6052254	1.3058237	665
670	4.227	0.6260110	1.1973910	4.015	0.6036575	1.3062448	670
675	4.212	0.6244522	1.1977771	4.000	0.6021017	1.3066659	675
680	4.197	0.6229054	1.1981631	3.986	0.6005577	1.3070870	680
685	4.182	0.6213703	1.1985491	3.972	0.5990255	1.3075082	685
690	4.167	0.6198468	1.1989352	3.958	0.5975049	1.3079293	690
695	4.153	0.6183346	1.1993212	3.944	0.5959957	1.3083504	695
700	4.138	0.6168337	1.1997072	3.931	0.5944977	1.3087715	700

Sine of Inclination (1 over)	$n = \cdot 035$			$n = \cdot 050$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
455	4·489	0·6472985	1·5028258	3·711	0·5695241	2·1468940	455
460	4·416	0·6449896	1·5033171	3·692	0·5672279	2·1475959	460
465	4·392	0·6427064	1·5038084	3·672	0·5649573	2·1482978	465
470	4·370	0·6404484	1·5042997	3·654	0·5627119	2·1489996	470
475	4·347	0·6382148	1·5047911	3·635	0·5604909	2·1497015	475
480	4·325	0·6360054	1·5052824	3·617	0·5582941	2·1504084	480
485	4·303	0·6338194	1·5057737	3·598	0·5561207	2·1511053	485
490	4·282	0·6316566	1·5062650	3·581	0·5539705	2·1518071	490
495	4·261	0·6295163	1·5067563	3·563	0·5518428	2·1525090	495
500	4·240	0·6273982	1·5072476	3·546	0·5497373	2·1532109	500
505	4·220	0·6253018	1·5077389	3·529	0·5476535	2·1539128	505
510	4·200	0·6232267	1·5082302	3·512	0·5455910	2·1546146	510
515	4·180	0·6211725	1·5087216	3·496	0·5435494	2·1553165	515
520	4·160	0·6191386	1·5092129	3·480	0·5415281	2·1560184	520
525	4·141	0·6171249	1·5097042	3·464	0·5395269	2·1567203	525
530	4·122	0·6151189	1·5101955	3·448	0·5375455	2·1574221	530
535	4·104	0·6131563	1·5106868	3·432	0·5355884	2·1581240	535
540	4·085	0·6112005	1·5111781	3·417	0·5336402	2·1588259	540
545	4·067	0·6092633	1·5116694	3·402	0·5317156	2·1595278	545
550	4·049	0·6073444	1·5121607	3·387	0·5298092	2·1602296	550
555	4·031	0·6054435	1·5126521	3·372	0·5279208	2·1609315	555
560	4·014	0·6035601	1·5131434	3·358	0·5260500	2·1616334	560
565	3·997	0·6016941	1·5136347	3·343	0·5241965	2·1623353	565
570	3·980	0·5998450	1·5141260	3·329	0·5223600	2·1630371	570
575	3·963	0·5980127	1·5146173	3·315	0·5205402	2·1637390	575
580	3·946	0·5961968	1·5151086	3·302	0·5187368	2·1644409	580
585	3·930	0·5943969	1·5155999	3·288	0·5169495	2·1651428	585
590	3·914	0·5926129	1·5160912	3·275	0·5151780	2·1658446	590
595	3·898	0·5908447	1·5165826	3·262	0·5134223	2·1665465	595
600	3·882	0·5890917	1·5170739	3·248	0·5116818	2·1672484	600
605	3·867	0·5873537	1·5175652	3·236	0·5099564	2·1679503	605
610	3·852	0·5856305	1·5180565	3·223	0·5082457	2·1686521	610
615	3·836	0·5839219	1·5185478	3·210	0·5065495	2·1693540	615
620	3·821	0·5822277	1·5190391	3·198	0·5048678	2·1700559	620
625	3·807	0·5805477	1·5195304	3·186	0·5032008	2·1707578	625
630	3·792	0·5788816	1·5200217	3·174	0·5015466	2·1714596	630
635	3·778	0·5772290	1·5205131	3·162	0·4999065	2·1721615	635
640	3·763	0·5755898	1·5210044	3·150	0·4982798	2·1728634	640
645	3·749	0·5739640	1·5214957	3·138	0·4966664	2·1735653	645
650	3·736	0·5723512	1·5219870	3·127	0·4950661	2·1742671	650
655	3·722	0·5707512	1·5224783	3·115	0·4934786	2·1749690	655
660	3·708	0·5691639	1·5229696	3·104	0·4919038	2·1756709	660
665	3·695	0·5675891	1·5234609	3·093	0·4903415	2·1763728	665
670	3·682	0·5660265	1·5239522	3·082	0·4887913	2·1770747	670
675	3·668	0·5644759	1·5244436	3·071	0·4872542	2·1777765	675
680	3·655	0·5629372	1·5249349	3·060	0·4857270	2·1784784	680
685	3·643	0·5614104	1·5254262	3·049	0·4842126	2·1791803	685
690	3·630	0·5598952	1·5259175	3·039	0·4827098	2·1798821	690
695	3·617	0·5583912	1·5264088	3·028	0·4812183	2·1805840	695
700	3·605	0·5568985	1·5269001	3·018	0·4797380	2·1812859	700

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	9.228	0.9648908	.89275780	8.465	0.9276480	.48639755	705
710	9.191	0.9638810	.89288418	8.438	0.9261406	.48658793	710
715	9.160	0.9618821	.89301047	8.407	0.9246439	.48667830	715
720	9.128	0.9608988	.89318681	8.378	0.9231578	.48681868	720
725	9.097	0.9589159	.89326815	8.350	0.9216821	.48695905	725
730	9.067	0.9574488	.89338948	8.322	0.9202168	.48709943	730
735	9.036	0.9559910	.89351582	8.294	0.9187617	.48723980	735
740	9.006	0.9545488	.89364216	8.266	0.9173167	.48738018	740
745	8.976	0.9531063	.89376850	8.239	0.9158815	.48752055	745
750	8.947	0.9516787	.89389488	8.212	0.9144561	.48766093	750
755	8.918	0.9502607	.89402117	8.185	0.9130408	.48780130	755
760	8.889	0.9488522	.89414751	8.159	0.9116341	.48794168	760
765	8.860	0.9474532	.89427385	8.133	0.9102373	.48808205	765
770	8.832	0.9460635	.89440018	8.107	0.9088497	.48822243	770
775	8.804	0.9446828	.89452652	8.081	0.9074713	.48836280	775
780	8.776	0.9433118	.89465286	8.056	0.9061020	.48850318	780
785	8.749	0.9419486	.89477920	8.030	0.9047416	.48864355	785
790	8.722	0.9405948	.89490553	8.006	0.9033900	.48878393	790
795	8.695	0.9392497	.89503187	7.981	0.9020471	.48892430	795
800	8.668	0.9379132	.89515821	7.956	0.9007127	.48906468	800
805	8.641	0.9365850	.89528455	7.932	0.8993868	.48920505	805
810	8.615	0.9352653	.89541088	7.908	0.8980692	.48934543	810
815	8.589	0.9339589	.89553722	7.884	0.8967601	.48948580	815
820	8.563	0.9326505	.89566356	7.861	0.8954590	.48962618	820
825	8.538	0.9313553	.89578990	7.837	0.8941660	.48976655	825
830	8.513	0.9300681	.89591623	7.814	0.8928812	.48990693	830
835	8.488	0.9287888	.89604257	7.791	0.8916041	.44004730	835
840	8.463	0.9275173	.89616891	7.768	0.8903348	.44018768	840
845	8.438	0.9262535	.89629525	7.746	0.8890731	.44032805	845
850	8.414	0.9249973	.89642158	7.724	0.8878191	.44046843	850
855	8.390	0.9237485	.89654792	7.701	0.8865726	.44060880	855
860	8.366	0.9225072	.89667426	7.680	0.8853334	.44074918	860
865	8.342	0.9212731	.89680060	7.658	0.8841016	.44088955	865
870	8.319	0.9200464	.89692693	7.636	0.8828771	.44102993	870
875	8.295	0.9188270	.89705327	7.615	0.8816599	.44117030	875
880	8.272	0.9176145	.89717961	7.594	0.8804496	.44131068	880
885	8.249	0.9164090	.89730595	7.573	0.8792463	.44145105	885
890	8.226	0.9152105	.89743228	7.552	0.8780500	.44159143	890
895	8.204	0.9140188	.89755862	7.531	0.8768606	.44173180	895
900	8.182	0.9128339	.89768496	7.511	0.8756779	.44187218	900
905	8.159	0.9116557	.89781130	7.490	0.8745020	.44201255	905
910	8.137	0.9104841	.89793763	7.470	0.8733327	.44215293	910
915	8.116	0.9093191	.89806397	7.450	0.8721698	.44229330	915
920	8.094	0.9081606	.89819031	7.430	0.8710135	.44243368	920
925	8.073	0.9070084	.89831665	7.411	0.8698635	.44257405	925
930	8.051	0.9058626	.89844298	7.391	0.8687200	.44271443	930
935	8.030	0.9047232	.89856932	7.372	0.8675827	.44285480	935
940	8.009	0.9035899	.89869566	7.353	0.8664516	.44299518	940
945	7.988	0.9024627	.89882200	7.334	0.8653267	.44313555	945
950	7.968	0.9013416	.89894833	7.315	0.8642078	.44327593	950

Sine of Inclina- tion (1 over)	$n = \cdot 011$			$n = \cdot 012$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	7·845	0·8946064	·48008781	7·328	0·8650114	·52367706	705
710	7·818	0·8931011	·48019172	7·303	0·8635082	·52384551	710
715	7·791	0·8916066	·48034613	7·278	0·8620157	·52401396	715
720	7·765	0·8901227	·48050054	7·253	0·8605338	·52418241	720
725	7·738	0·8886491	·48065496	7·229	0·8590623	·52435086	725
730	7·712	0·8871858	·48080937	7·204	0·8576011	·52451931	730
735	7·687	0·8857329	·48096378	7·180	0·8561502	·52468776	735
740	7·661	0·8842901	·48111819	7·157	0·8547094	·52485621	740
745	7·636	0·8828571	·48127261	7·133	0·8532785	·52502466	745
750	7·611	0·8814338	·48142702	7·110	0·8518573	·52519311	750
755	7·586	0·8800201	·48158143	7·087	0·8504457	·52536156	755
760	7·562	0·8786160	·48173584	7·064	0·8490437	·52553001	760
765	7·537	0·8772214	·48189026	7·041	0·8476511	·52569846	765
770	7·513	0·8758359	·48204467	7·019	0·8462677	·52586691	770
775	7·490	0·8744597	·48219908	6·997	0·8448935	·52603536	775
780	7·466	0·8730925	·48235349	6·975	0·8435284	·52620381	780
785	7·443	0·8717342	·48250791	6·953	0·8421722	·52637226	785
790	7·420	0·8703848	·48266232	6·931	0·8408248	·52654071	790
795	7·397	0·8690440	·48281673	6·910	0·8394861	·52670916	795
800	7·374	0·8677118	·48297114	6·889	0·8381560	·52687761	800
805	7·352	0·8663881	·48312556	6·868	0·8368343	·52704606	805
810	7·329	0·8650727	·48327997	6·847	0·8355210	·52721451	810
815	7·307	0·8637656	·48343438	6·827	0·8342159	·52738296	815
820	7·286	0·8624667	·48358879	6·806	0·8329190	·52755141	820
825	7·264	0·8611758	·48374321	6·786	0·8316302	·52771986	825
830	7·243	0·8598930	·48389762	6·766	0·8303496	·52788831	830
835	7·221	0·8586181	·48405203	6·746	0·8290766	·52805676	835
840	7·200	0·8573509	·48420644	6·727	0·8278115	·52822521	840
845	7·179	0·8560913	·48436086	6·707	0·8265541	·52839366	845
850	7·159	0·8548395	·48451527	6·688	0·8253042	·52856211	850
855	7·138	0·8535952	·48466968	6·669	0·8240620	·52873056	855
860	7·118	0·8523582	·48482409	6·650	0·8228270	·52889901	860
865	7·098	0·8511284	·48497851	6·631	0·8215993	·52906746	865
870	7·078	0·8499060	·48513292	6·613	0·8203791	·52923591	870
875	7·058	0·8486910	·48528733	6·594	0·8191660	·52940436	875
880	7·039	0·8474829	·48544174	6·576	0·8179599	·52957281	880
885	7·019	0·8462818	·48559616	6·558	0·8167609	·52974126	885
890	7·000	0·8450876	·48575057	6·540	0·8155687	·52990971	890
895	6·981	0·8439002	·48590498	6·522	0·8143834	·53007816	895
900	6·962	0·8427197	·48605939	6·504	0·8132049	·53024661	900
905	6·943	0·8415460	·48621381	6·487	0·8120332	·53041506	905
910	6·924	0·8403788	·48636822	6·469	0·8108681	·53058351	910
915	6·906	0·8392179	·48652263	6·452	0·8097195	·53075196	915
920	6·888	0·8380637	·48667704	6·435	0·8085573	·53092041	920
925	6·869	0·8369159	·48683146	6·418	0·8074115	·53108886	925
930	6·851	0·8357746	·48698587	6·401	0·8062721	·53125731	930
935	6·833	0·8346395	·48714028	6·385	0·8051391	·53142576	935
940	6·816	0·8335105	·48729469	6·368	0·8040123	·53159421	940
945	6·798	0·8323876	·48744911	6·352	0·8028914	·53176266	945
950	6·781	0·8312709	·48760352	6·335	0·8017766	·53193111	950

Sine of Inclina- tion (1 over)	n = .013			n = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	6·891	0·8882910	·56781682	6·516	0·8140019	·61095657	705
710	6·867	0·8867898	·56749930	6·494	0·8125025	·61115310	710
715	6·844	0·8852998	·56768179	6·472	0·8110140	·61134962	715
720	6·821	0·8838194	·56786428	6·450	0·8095360	·61154615	720
725	6·798	0·8823499	·56804677	6·428	0·8080684	·61174267	725
730	6·775	0·8808907	·56822925	6·406	0·8066112	·61193920	730
735	6·752	0·8294418	·56841174	6·385	0·8051642	·61213572	735
740	6·730	0·8280030	·56859428	6·364	0·8037273	·61233225	740
745	6·708	0·8265740	·56877672	6·343	0·8023002	·61252877	745
750	6·686	0·8251548	·56895920	6·322	0·8008880	·61272530	750
755	6·664	0·8237452	·56914169	6·302	0·7994758	·61292182	755
760	6·643	0·8223452	·56932418	6·282	0·7980772	·61311835	760
765	6·621	0·8209546	·56950667	6·262	0·7966885	·61331487	765
770	6·600	0·8195782	·56968915	6·242	0·7953089	·61351140	770
775	6·580	0·8182010	·56987164	6·222	0·7939386	·61370792	775
780	6·559	0·8168379	·57005418	6·203	0·7925774	·61390445	780
785	6·539	0·8154887	·57023662	6·183	0·7912251	·61410097	785
790	6·518	0·8141382	·57041910	6·164	0·7898816	·61429750	790
795	6·498	0·8128014	·57060159	6·145	0·7885488	·61449402	795
800	6·478	0·8114738	·57078408	6·127	0·7872206	·61469055	800
805	6·459	0·8101536	·57096657	6·108	0·7859028	·61488707	805
810	6·439	0·8088423	·57114905	6·090	0·7845934	·61508360	810
815	6·420	0·8075392	·57133154	6·071	0·7832922	·61528012	815
820	6·401	0·8062443	·57151408	6·053	0·7819992	·61547665	820
825	6·382	0·8049575	·57169652	6·036	0·7807139	·61567317	825
830	6·363	0·8036787	·57187900	6·018	0·7794375	·61586970	830
835	6·345	0·8024079	·57206149	6·000	0·7781685	·61606622	835
840	6·326	0·8011448	·57224398	5·983	0·7769073	·61626275	840
845	6·308	0·7998892	·57242647	5·966	0·7756538	·61645927	845
850	6·290	0·7986414	·57260895	5·949	0·7744078	·61665580	850
855	6·272	0·7974011	·57279144	5·932	0·7731693	·61685232	855
860	6·254	0·7961681	·57297393	5·915	0·7719382	·61704885	860
865	6·237	0·7949424	·57315642	5·898	0·7707145	·61724537	865
870	6·219	0·7937241	·57333890	5·882	0·7694980	·61744190	870
875	6·202	0·7925180	·57352139	5·865	0·7682889	·61763842	875
880	6·185	0·7913090	·57370388	5·849	0·7670867	·61783495	880
885	6·168	0·7901119	·57388637	5·833	0·7658916	·61803147	885
890	6·151	0·7889217	·57406885	5·817	0·7647033	·61822800	890
895	6·134	0·7877384	·57425134	5·801	0·7635219	·61842452	895
900	6·117	0·7865619	·57443383	5·786	0·7623474	·61862105	900
905	6·101	0·7853921	·57461632	5·770	0·7611795	·61881757	905
910	6·085	0·7842290	·57479880	5·755	0·7600182	·61901410	910
915	6·068	0·7830723	·57498129	5·739	0·7588634	·61921062	915
920	6·052	0·7819221	·57516378	5·724	0·7577151	·61940715	920
925	6·036	0·7807788	·57534627	5·709	0·7565732	·61960367	925
930	6·021	0·7796409	·57552875	5·694	0·7554377	·61980020	930
935	6·005	0·7785098	·57571124	5·679	0·7543085	·61999672	935
940	5·989	0·7773849	·57589373	5·665	0·7531855	·62019325	940
945	5·974	0·7762661	·57607622	5·650	0·7520686	·62038977	945
950	5·959	0·7751534	·57625870	5·636	0·7509578	·62058630	950

Sine of Inclina- tion (1-over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	6.191	0.7917988	.65459638	5.656	0.7525414	.74187584	705
710	6.170	0.7902958	.65480689	5.687	0.7510474	.74211447	710
715	6.149	0.7888091	.65501745	5.618	0.7495642	.74235811	715
720	6.128	0.7873329	.65522801	5.599	0.7480916	.74259175	720
725	6.108	0.7858672	.65543858	5.580	0.7466294	.74283089	725
730	6.087	0.7844118	.65564914	5.561	0.7451775	.74306902	730
735	6.067	0.7829669	.65585970	5.543	0.7437859	.74330766	735
740	6.047	0.7815316	.65607026	5.525	0.7423048	.74354680	740
745	6.027	0.7801064	.65628083	5.507	0.7408826	.74378494	745
750	6.007	0.7786909	.65649139	5.489	0.7394706	.74402357	750
755	5.988	0.7772851	.65670195	5.471	0.7380688	.74426221	755
760	5.969	0.7758888	.65691251	5.454	0.7366755	.74450085	760
765	5.950	0.7745020	.65712308	5.436	0.7352922	.74473949	765
770	5.931	0.7731243	.65733364	5.419	0.7339180	.74497812	770
775	5.912	0.7717559	.65754420	5.402	0.7325531	.74521676	775
780	5.894	0.7703965	.65775476	5.385	0.7311972	.74545540	780
785	5.876	0.7690461	.65796533	5.368	0.7298508	.74569404	785
790	5.857	0.7677044	.65817589	5.352	0.7285121	.74593267	790
795	5.839	0.7663714	.65838645	5.336	0.7271826	.74617131	795
800	5.822	0.7650470	.65859701	5.319	0.7258617	.74640995	800
805	5.804	0.7637311	.65880758	5.303	0.7245492	.74664859	805
810	5.787	0.7624235	.65901814	5.287	0.7232451	.74688722	810
815	5.769	0.7611242	.65922870	5.272	0.7219493	.74712586	815
820	5.752	0.7598330	.65943926	5.256	0.7206616	.74736450	820
825	5.735	0.7585499	.65964983	5.241	0.7193820	.74760314	825
830	5.718	0.7572749	.65986039	5.225	0.7181105	.74784177	830
835	5.702	0.7560078	.66007095	5.210	0.7168470	.74808041	835
840	5.685	0.7547484	.66028151	5.195	0.7155911	.74831905	840
845	5.669	0.7534967	.66049208	5.180	0.7143429	.74855769	845
850	5.653	0.7522526	.66070264	5.165	0.7131022	.74879632	850
855	5.637	0.7510160	.66091820	5.151	0.7118691	.74903496	855
860	5.621	0.7497868	.66112876	5.136	0.7106434	.74927360	860
865	5.605	0.7485648	.66133433	5.122	0.7094250	.74951224	865
870	5.589	0.7473502	.66154489	5.108	0.7082138	.74975087	870
875	5.574	0.7461429	.66175545	5.093	0.7070100	.74998951	875
880	5.558	0.7449426	.66196601	5.079	0.7058131	.75022815	880
885	5.543	0.7437493	.66217658	5.066	0.7046233	.75046679	885
890	5.528	0.7425628	.66238714	5.052	0.7034404	.75070542	890
895	5.513	0.7413833	.66259770	5.038	0.7022643	.75094406	895
900	5.498	0.7402106	.66280826	5.025	0.7010951	.75118270	900
905	5.483	0.7390445	.66301883	5.011	0.6999325	.75142134	905
910	5.469	0.7378851	.66322939	4.998	0.6987766	.75165997	910
915	5.454	0.7367321	.66343995	4.985	0.6976271	.75189861	915
920	5.440	0.7355857	.66365051	4.971	0.6964841	.75213725	920
925	5.426	0.7344456	.66386108	4.958	0.6953475	.75237589	925
930	5.411	0.7333120	.66407164	4.946	0.6942173	.75261452	930
935	5.397	0.7321846	.66428220	4.933	0.6930934	.75285316	935
940	5.383	0.7310635	.66449276	4.920	0.6919758	.75309180	940
945	5.370	0.7299484	.66470333	4.908	0.6908642	.75333044	945
950	5.356	0.7288394	.66491389	4.895	0.6897587	.75356707	950

G.

E

Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	5.054	0.7086778	.87279510	4.675	0.6698279	.98189449	705
710	5.087	0.7021881	.87807585	4.659	0.6688424	.98221088	710
715	5.020	0.7007097	.87885660	4.644	0.6668677	.98252618	715
720	5.008	0.6992419	.87868785	4.628	0.6654086	.98284202	720
725	4.986	0.6977845	.87891810	4.618	0.6639499	.98315786	725
730	4.970	0.6963875	.87419885	4.597	0.6625065	.98349871	730
735	4.958	0.6949007	.87447960	4.582	0.6610788	.98378955	735
740	4.987	0.6984789	.87476085	4.567	0.6596508	.98410540	740
745	4.921	0.6920577	.87504110	4.552	0.6582871	.98442124	745
750	4.905	0.6906499	.87582185	4.588	0.6568836	.98478708	750
755	4.889	0.6892524	.87560260	4.528	0.6554898	.98505298	755
760	4.874	0.6878645	.87588885	4.509	0.6540555	.98536877	760
765	4.858	0.6864860	.87616410	4.494	0.6526807	.98568461	765
770	4.848	0.6851166	.87644485	4.480	0.6518151	.98600046	770
775	4.828	0.6887565	.87672560	4.466	0.6499586	.98631680	775
780	4.818	0.6824055	.87700635	4.458	0.6486112	.98663215	780
785	4.798	0.6810638	.87728710	4.439	0.6472727	.98694799	785
790	4.788	0.6797300	.87756785	4.425	0.6459430	.98726383	790
795	4.769	0.6784058	.87784860	4.412	0.6446220	.98757968	795
800	4.754	0.6770892	.87812985	4.399	0.6433097	.98789552	800
805	4.740	0.6757816	.87841010	4.385	0.6420057	.98821136	805
810	4.726	0.6744828	.87869085	4.372	0.6407100	.98852721	810
815	4.712	0.6731918	.87897160	4.359	0.6394227	.98884305	815
820	4.698	0.6719084	.87925235	4.347	0.6381485	.98915890	820
825	4.684	0.6706336	.87953310	4.334	0.6368724	.98947474	825
830	4.671	0.6693670	.87981385	4.321	0.6356094	.98979058	830
835	4.657	0.6681082	.88009460	4.309	0.6343543	.99010643	835
840	4.644	0.6668571	.88037535	4.296	0.6331068	.99042227	840
845	4.630	0.6656136	.88065610	4.284	0.6318670	.99073811	845
850	4.617	0.6643778	.88093685	4.272	0.6306349	.99105396	850
855	4.604	0.6631495	.88121760	4.260	0.6294102	.99136980	855
860	4.591	0.6619286	.88149835	4.248	0.6281930	.99168565	860
865	4.578	0.6607150	.88177910	4.236	0.6269830	.99200149	865
870	4.566	0.6595086	.88205985	4.225	0.6257808	.99231733	870
875	4.553	0.6583096	.88234060	4.213	0.6245849	.99263318	875
880	4.541	0.6571176	.88262135	4.201	0.6233966	.99294902	880
885	4.528	0.6559826	.88290210	4.190	0.6222152	.99326486	885
890	4.516	0.6547544	.88318285	4.179	0.6210407	.99358071	890
895	4.504	0.6535831	.88346360	4.167	0.6198731	.99389655	895
900	4.492	0.6524187	.88374435	4.156	0.6187123	.99421240	900
905	4.480	0.6512610	.88402510	4.145	0.6175582	.99452824	905
910	4.468	0.6501098	.88430585	4.134	0.6164106	.99484408	910
915	4.456	0.6489651	.88458660	4.124	0.6152696	.99515993	915
920	4.445	0.6478269	.88486735	4.113	0.6141351	.99547577	920
925	4.433	0.6466951	.88514810	4.102	0.6130070	.99579161	925
930	4.422	0.6455698	.88542885	4.092	0.6118858	.99610746	930
935	4.410	0.6444507	.88570960	4.081	0.6107698	.99642330	935
940	4.399	0.6433378	.88599035	4.071	0.6096605	.99673915	940
945	4.388	0.6422310	.88627110	4.060	0.6085574	.99705499	945
950	4.377	0.6411308	.88655185	4.050	0.6074608	.99737083	950

Sine of Inclina- tion (1 over)	<i>n</i> = .0250			<i>n</i> = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	4·872	0·6407105	1·0909989	4·124	0·6158487	1·2000988	705
710	4·857	0·6392284	1·0918448	4·110	0·6138648	1·2004798	710
715	4·848	0·6377571	1·0916958	4·096	0·6128966	1·2008658	715
720	4·828	0·6362964	1·0920467	4·088	0·6109891	1·2012514	720
725	4·814	0·6348461	1·0923976	4·069	0·6094920	1·2016874	725
730	4·299	0·6384061	1·0927486	4·056	0·6080551	1·2020284	730
735	4·285	0·6319764	1·0930995	4·042	0·6066285	1·2024095	735
740	4·271	0·6305567	1·0934504	4·029	0·6052121	1·2027955	740
745	4·257	0·6291468	1·0938014	4·016	0·6038054	1·2031815	745
750	4·244	0·6277468	1·0941528	4·003	0·6024085	1·2035675	750
755	4·230	0·6263564	1·0945088	3·990	0·6010212	1·2039536	755
760	4·217	0·6249756	1·0948542	3·978	0·5996485	1·2043396	760
765	4·208	0·6236041	1·0952051	3·965	0·5982752	1·2047256	765
770	4·190	0·6222418	1·0955560	3·953	0·5969161	1·2051117	770
775	4·177	0·6208887	1·0959070	3·941	0·5955661	1·2054977	775
780	4·164	0·6195448	1·0962579	3·928	0·5942258	1·2058887	780
785	4·152	0·6182097	1·0966089	3·916	0·5928984	1·2062698	785
790	4·139	0·6168834	1·0969598	3·905	0·5915702	1·2066558	790
795	4·126	0·6155658	1·0973108	3·893	0·5902557	1·2070418	795
800	4·114	0·6142568	1·0976617	3·881	0·5889499	1·2074279	800
805	4·102	0·6129562	1·0980126	3·869	0·5876524	1·2078189	805
810	4·089	0·6116640	1·0983636	3·858	0·5863634	1·2081999	810
815	4·077	0·6103800	1·0987145	3·847	0·5850826	1·2085860	815
820	4·065	0·6091042	1·0990654	3·835	0·5838099	1·2089720	820
825	4·054	0·6078865	1·0994164	3·824	0·5825453	1·2093580	825
830	4·042	0·6065768	1·0997678	3·813	0·5812888	1·2097440	830
835	4·030	0·6053251	1·1001183	3·802	0·5800402	1·2101301	835
840	4·019	0·6040810	1·1004692	3·791	0·5787998	1·2105161	840
845	4·007	0·6028446	1·1008201	3·781	0·5775660	1·2109021	845
850	3·996	0·6016159	1·1011711	3·770	0·5763404	1·2112882	850
855	3·985	0·6003945	1·1015220	3·759	0·5751223	1·2116742	855
860	3·974	0·5991807	1·1018729	3·749	0·5739115	1·2120602	860
865	3·963	0·5979742	1·1022239	3·739	0·5727081	1·2124463	865
870	3·952	0·5967749	1·1025748	3·728	0·5715119	1·2128323	870
875	3·941	0·5955829	1·1029258	3·718	0·5703281	1·2132183	875
880	3·930	0·5943979	1·1032767	3·708	0·5691412	1·2136044	880
885	3·919	0·5932198	1·1036276	3·698	0·5679668	1·2139904	885
890	3·909	0·5920487	1·1039786	3·688	0·5667988	1·2143764	890
895	3·898	0·5908845	1·1043295	3·678	0·5656372	1·2147625	895
900	3·888	0·5897271	1·1046804	3·668	0·5644829	1·2151485	900
905	3·878	0·5885768	1·1050314	3·659	0·5633353	1·2155345	905
910	3·868	0·5874322	1·1053823	3·649	0·5621948	1·2159205	910
915	3·857	0·5862946	1·1057333	3·640	0·5610598	1·2163066	915
920	3·847	0·5851634	1·1060842	3·630	0·5599318	1·2166926	920
925	3·837	0·5840386	1·1064351	3·621	0·5588101	1·2170786	925
930	3·828	0·5829208	1·1067861	3·612	0·5576949	1·2174647	930
935	3·818	0·5818082	1·1071370	3·602	0·5565859	1·2178507	935
940	3·808	0·5807023	1·1074879	3·593	0·5554832	1·2182367	940
945	3·798	0·5796025	1·1078389	3·584	0·5543865	1·2186228	945
950	3·789	0·5785088	1·1081898	3·575	0·5532959	1·2190088	950

Sine of Inclina- tion (1 over)	n = .030			n = .035			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
705	8·918	0·5980107	1·8091927	3·598	0·5554169	1·5278914	705
710	3·904	0·5915847	1·8096188	3·581	0·5589462	1·5278827	710
715	3·891	0·5900695	1·8100849	3·569	0·5524862	1·5288741	715
720	3·878	0·5886149	1·8104560	3·557	0·5510369	1·5288654	720
725	3·865	0·5871707	1·8108772	3·545	0·5495980	1·5298567	725
730	3·852	0·5857368	1·8112983	3·533	0·5481693	1·5298480	730
735	3·840	0·5843132	1·8117194	3·522	0·5467510	1·5308398	735
740	3·827	0·5828996	1·8121405	3·510	0·5453428	1·5308306	740
745	3·815	0·5814959	1·8125617	3·499	0·5439448	1·5318219	745
750	3·803	0·5801019	1·8129828	3·488	0·5425556	1·5318132	750
755	3·791	0·5787175	1·8134039	3·477	0·5411766	1·5328046	755
760	3·779	0·5773428	1·8138250	3·466	0·5398071	1·5327959	760
765	3·767	0·5759774	1·8142462	3·455	0·5384470	1·5332872	765
770	3·755	0·5746212	1·8146673	3·444	0·5370961	1·5337785	770
775	3·743	0·5732742	1·8150884	3·434	0·5357548	1·5342698	775
780	3·732	0·5719368	1·8155095	3·423	0·5344217	1·5347611	780
785	3·721	0·5706073	1·8159307	3·413	0·5330980	1·5352524	785
790	3·709	0·5692871	1·8163518	3·402	0·5317831	1·5357437	790
795	3·698	0·5679756	1·8167729	3·392	0·5304768	1·5362351	795
800	3·687	0·5666726	1·8171940	3·382	0·5291791	1·5367264	800
805	3·676	0·5653781	1·8176152	3·372	0·5278899	1·5372177	805
810	3·665	0·5640919	1·8180363	3·362	0·5266089	1·5377090	810
815	3·654	0·5628140	1·8184574	3·352	0·5253364	1·5382003	815
820	3·644	0·5615442	1·8188785	3·342	0·5240719	1·5386916	820
825	3·633	0·5602826	1·8192997	3·333	0·5228154	1·5391829	825
830	3·623	0·5590290	1·8197208	3·323	0·5215671	1·5396742	830
835	3·612	0·5577833	1·8201419	3·314	0·5203267	1·5401656	835
840	3·602	0·5565453	1·8205630	3·304	0·5190939	1·5406569	840
845	3·592	0·5553150	1·8209842	3·295	0·5178689	1·5411482	845
850	3·582	0·5540923	1·8214053	3·286	0·5166514	1·5416395	850
855	3·572	0·5528771	1·8218264	3·277	0·5154414	1·5421308	855
860	3·562	0·5516698	1·8222475	3·268	0·5142389	1·5426221	860
865	3·552	0·5504687	1·8226687	3·259	0·5130436	1·5431134	865
870	3·542	0·5492755	1·8230898	3·250	0·5118556	1·5436047	870
875	3·533	0·5480895	1·8235109	3·241	0·5106749	1·5440961	875
880	3·523	0·5469105	1·8239320	3·232	0·5095012	1·5445874	880
885	3·513	0·5457386	1·8243532	3·224	0·5083345	1·5450787	885
890	3·504	0·5445785	1·8247743	3·215	0·5071746	1·5455700	890
895	3·495	0·5434153	1·8251954	3·206	0·5060217	1·5460613	895
900	3·486	0·5422639	1·8256165	3·198	0·5048756	1·5465526	900
905	3·476	0·5411192	1·8260377	3·190	0·5037361	1·5470439	905
910	3·467	0·5399811	1·8264588	3·181	0·5026032	1·5475352	910
915	3·458	0·5388495	1·8268799	3·173	0·5014768	1·5480266	915
920	3·449	0·5377244	1·8273010	3·165	0·5003569	1·5485179	920
925	3·440	0·5366057	1·8277222	3·157	0·4992435	1·5490092	925
930	3·432	0·5354933	1·8281433	3·149	0·4981364	1·5495005	930
935	3·423	0·5343873	1·8285644	3·141	0·4970355	1·5499918	935
940	3·414	0·5332874	1·8289855	3·133	0·4959409	1·5504831	940
945	3·406	0·5321936	1·8294067	3·125	0·4948524	1·5509744	945
950	3·397	0·5311059	1·8298278	3·117	0·4937700	1·5514657	950

Sine of Inclina- tion (1 over)	$n = \cdot 050$			Sine of Inclina- tion (1 over)	$n = \cdot 009$		
	N	log. N	D		N	log. N	D
705	3.008	0.4782687	2.1819878	955	7.947	0.9002265	.89907467
710	2.998	0.4768105	2.1826896	960	7.927	0.8991174	.89920101
715	2.988	0.4753630	2.1833915	965	7.907	0.8980142	.89932735
720	2.978	0.4739261	2.1840934	970	7.887	0.8969168	.89945368
725	2.968	0.4724995	2.1847953	975	7.867	0.8958252	.89958002
730	2.959	0.4710838	2.1854971	980	7.848	0.8947393	.89970636
735	2.949	0.4696774	2.1861990	985	7.828	0.8936591	.89983270
740	2.940	0.4682815	2.1869009	990	7.809	0.8925844	.89995908
745	2.930	0.4668955	2.1876028	995	7.790	0.8915153	.40008537
750	2.921	0.4655192	2.1883046	1000	7.771	0.8904516	.40021171
755	2.912	0.4641525	2.1890065	1005	7.752	0.8893930	.40033805
760	2.903	0.4627954	2.1897084	1010	7.733	0.8883405	.40046438
765	2.894	0.4614476	2.1904103	1015	7.714	0.8872930	.40059072
770	2.885	0.4601091	2.1911121	1020	7.696	0.8862507	.40071706
775	2.876	0.4587798	2.1918140	1025	7.677	0.8852136	.40084340
780	2.867	0.4574595	2.1925159	1030	7.659	0.8841817	.40096973
785	2.859	0.4561481	2.1932178	1035	7.641	0.8831550	.40109607
790	2.850	0.4548455	2.1939196	1040	7.623	0.8821334	.40122241
795	2.842	0.4535516	2.1946215	1045	7.605	0.8811167	.40134875
800	2.833	0.4522663	2.1953234	1050	7.588	0.8801049	.40147508
805	2.825	0.4509894	2.1960253	1055	7.570	0.8790981	.40160142
810	2.817	0.4497208	2.1967271	1060	7.553	0.8780962	.40172776
815	2.808	0.4484606	2.1974290	1065	7.535	0.8770992	.40185410
820	2.800	0.4472084	2.1981309	1070	7.518	0.8761069	.40198043
825	2.792	0.4459643	2.1988328	1075	7.501	0.8751194	.40210677
830	2.784	0.4447283	2.1995346	1080	7.484	0.8741364	.40223311
835	2.777	0.4435002	2.2002365	1085	7.467	0.8731588	.40235945
840	2.769	0.4422798	2.2009384	1090	7.450	0.8721848	.40248578
845	2.761	0.4410671	2.2016403	1095	7.434	0.8712158	.40261212
850	2.753	0.4398620	2.2023421	1100	7.417	0.8702512	.40273846
855	2.746	0.4386643	2.2030440	1105	7.401	0.8692912	.40286480
860	2.738	0.4374740	2.2037459	1110	7.385	0.8683356	.40299113
865	2.731	0.4362911	2.2044478	1115	7.369	0.8673844	.40311747
870	2.723	0.4351154	2.2051496	1120	7.353	0.8664376	.40324381
875	2.716	0.4339469	2.2058515	1125	7.337	0.8654951	.40337015
880	2.709	0.4327855	2.2065534	1130	7.321	0.8645569	.40349648
885	2.702	0.4316311	2.2072553	1135	7.305	0.8636229	.40362282
890	2.695	0.4304835	2.2079571	1140	7.289	0.8626943	.40374916
895	2.688	0.4293428	2.2086590	1145	7.274	0.8617678	.40387550
900	2.681	0.4282090	2.2093609	1150	7.258	0.8608463	.40400183
905	2.674	0.4270818	2.2100628	1155	7.243	0.8599290	.40412817
910	2.667	0.4259611	2.2107646	1160	7.228	0.8590157	.40425451
915	2.660	0.4248470	2.2114665	1165	7.213	0.8581065	.40438085
920	2.653	0.4237394	2.2121684	1170	7.198	0.8572013	.40450718
925	2.646	0.4226382	2.2128703	1175	7.183	0.8563001	.40463352
930	2.640	0.4215433	2.2135721	1180	7.168	0.8554029	.40475986
935	2.633	0.4204547	2.2142740	1185	7.153	0.8545095	.40488620
940	2.626	0.4193723	2.2149759	1190	7.139	0.8536199	.40501253
945	2.620	0.4182960	2.2156778	1195	7.124	0.8527342	.40513887
950	2.614	0.4172258	2.2163796	1200	7.110	0.8518522	.40526521

Sine of Inclina- tion (1 over)	n = .010			n = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	7.296	0.8680950	.44841680	6.768	0.8801608	.48775798	955
960	7.278	0.8619880	.44855668	6.746	0.8290554	.48791284	960
965	7.259	0.8608870	.44869705	6.729	0.8279565	.48806676	965
970	7.241	0.8597919	.44883748	6.712	0.8268635	.48822117	970
975	7.223	0.8587025	.44897780	6.695	0.8257762	.48837558	975
980	7.205	0.8576188	.44411818	7.679	0.8246947	.48852999	980
985	7.187	0.8565408	.44425855	6.662	0.8236188	.48868441	985
990	7.169	0.8554688	.44439898	6.646	0.8225484	.48883882	990
995	7.152	0.8544014	.44453930	6.630	0.8214837	.48899323	995
1000	7.134	0.8533399	.44467968	6.613	0.8204243	.48914764	1000
1005	7.117	0.8522839	.44482005	6.597	0.8193705	.48930206	1005
1010	7.100	0.8512338	.44496043	6.581	0.8183219	.48945647	1010
1015	7.088	0.8501880	.44510080	6.566	0.8172788	.48961088	1015
1020	7.066	0.8491479	.44524118	6.550	0.8162408	.48976529	1020
1025	7.049	0.8481180	.44538155	6.534	0.8152080	.48991970	1025
1030	7.032	0.8470834	.44552198	6.519	0.8141805	.49007412	1030
1035	7.016	0.8460589	.44566230	6.504	0.8131582	.49022853	1035
1040	6.999	0.8450395	.44580268	6.488	0.8121409	.49038294	1040
1045	6.983	0.8440250	.44594305	6.473	0.8111285	.49053736	1045
1050	6.967	0.8430154	.44608348	6.458	0.8101211	.49069177	1050
1055	6.950	0.8420108	.44622380	6.443	0.8091186	.49084618	1055
1060	6.934	0.8410111	.44636418	6.429	0.8081210	.49100059	1060
1065	6.919	0.8400168	.44650455	6.414	0.8071284	.49115501	1065
1070	6.903	0.8390262	.44664493	6.399	0.8061404	.49130942	1070
1075	6.887	0.8380409	.44678530	6.385	0.8051572	.49146383	1075
1080	6.872	0.8370602	.44692568	6.371	0.8041786	.49161824	1080
1085	6.856	0.8360842	.44706605	6.356	0.8032048	.49177266	1085
1090	6.841	0.8351129	.44720643	6.342	0.8022356	.49192707	1090
1095	6.826	0.8341461	.44734680	6.328	0.8012709	.49208148	1095
1100	6.811	0.8331838	.44748718	6.314	0.8003107	.49223589	1100
1105	6.796	0.8322260	.44762755	6.300	0.7993550	.49239031	1105
1110	6.781	0.8312726	.44776793	6.286	0.7984037	.49254472	1110
1115	6.766	0.8303236	.44790830	6.273	0.7974569	.49269913	1115
1120	6.751	0.8293790	.44804868	6.259	0.7965144	.49285354	1120
1125	6.737	0.8284387	.44818905	6.246	0.7955762	.49300796	1125
1130	6.722	0.8275027	.44832943	6.232	0.7946422	.49316237	1130
1135	6.708	0.8265710	.44846980	6.219	0.7937128	.49331678	1135
1140	6.693	0.8256435	.44861018	6.206	0.7927874	.49347119	1140
1145	6.679	0.8247202	.44875055	6.193	0.7918661	.49362561	1145
1150	6.665	0.8238010	.44889093	6.179	0.7909491	.49378002	1150
1155	6.651	0.8228859	.44903130	6.166	0.7900360	.49393443	1155
1160	6.637	0.8219748	.44917168	6.154	0.7891271	.49408884	1160
1165	6.623	0.8210678	.44931205	6.141	0.7882228	.49424326	1165
1170	6.609	0.8201648	.44945243	6.128	0.7873214	.49439767	1170
1175	6.596	0.8192658	.44959280	6.115	0.7864244	.49455208	1175
1180	6.582	0.8183707	.44973318	6.103	0.7855315	.49470649	1180
1185	6.569	0.8174796	.44987355	6.090	0.7846425	.49486091	1185
1190	6.555	0.8165922	.45001393	6.078	0.7837573	.49501532	1190
1195	6.542	0.8157087	.45015430	6.066	0.7828759	.49516973	1195
1200	6.529	0.8148289	.45029468	6.053	0.7819982	.49532414	1200

Sine of Inclina- tion (1 over)	$n = \cdot 012$			$n = \cdot 013$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	6·319	0·8006679	·58209956	5·944	0·7740467	·57644119	955
960	6·308	0·7995662	·58226801	5·929	0·7729459	·57662368	960
965	6·287	0·7984685	·58243646	5·914	0·7718511	·57680617	965
970	6·272	0·7973775	·58260491	5·899	0·7707620	·57698865	970
975	6·256	0·7962923	·58277386	5·884	0·7696788	·57717114	975
980	6·240	0·7952127	·58294181	5·870	0·7686018	·57735868	980
985	6·225	0·7941388	·58311026	5·855	0·7675294	·57753612	985
990	6·210	0·7930706	·58327871	5·841	0·7664631	·57771360	990
995	6·195	0·7920079	·58344716	5·826	0·7654023	·57790109	995
1000	6·179	0·7909506	·58361561	5·812	0·7643470	·57808358	1000
1005	6·164	0·7898988	·58378406	5·798	0·7632972	·57826607	1005
1010	6·150	0·7888523	·58395251	5·784	0·7622526	·57844855	1010
1015	6·135	0·7878112	·58412096	5·771	0·7612135	·57863104	1015
1020	6·120	0·7867752	·58428941	5·757	0·7601796	·57881353	1020
1025	6·106	0·7857445	·58445786	5·743	0·7591508	·57899602	1025
1030	6·091	0·7847190	·58462631	5·730	0·7581278	·57917850	1030
1035	6·077	0·7836987	·58479476	5·716	0·7571090	·57936099	1035
1040	6·063	0·7826835	·58496321	5·703	0·7560957	·57954348	1040
1045	6·049	0·7816732	·58513166	5·690	0·7550873	·57972597	1045
1050	6·035	0·7806677	·58530011	5·677	0·7540836	·57990845	1050
1055	6·021	0·7796672	·58546856	5·664	0·7530854	·58009094	1055
1060	6·007	0·7786717	·58563701	5·651	0·7520918	·58027343	1060
1065	5·994	0·7776810	·58580546	5·638	0·7511032	·58045592	1065
1070	5·980	0·7766950	·58597391	5·625	0·7501192	·58063840	1070
1075	5·966	0·7757140	·58614236	5·612	0·7491401	·58082089	1075
1080	5·953	0·7747375	·58631081	5·600	0·7481655	·58100338	1080
1085	5·940	0·7737656	·58647926	5·587	0·7471956	·58118587	1085
1090	5·927	0·7727985	·58664771	5·575	0·7462304	·58136835	1090
1095	5·913	0·7718359	·58681616	5·562	0·7452697	·58155084	1095
1100	5·900	0·7708777	·58698461	5·550	0·7443136	·58173333	1100
1105	5·887	0·7699241	·58715306	5·538	0·7433619	·58191582	1105
1110	5·875	0·7689749	·58732151	5·526	0·7424146	·58209830	1110
1115	5·862	0·7680301	·58748996	5·514	0·7414718	·58228079	1115
1120	5·849	0·7670897	·58765841	5·502	0·7405338	·58246328	1120
1125	5·837	0·7661535	·58782686	5·490	0·7395991	·58264577	1125
1130	5·824	0·7652216	·58799531	5·479	0·7386693	·58282825	1130
1135	5·812	0·7642941	·58816376	5·467	0·7377437	·58301074	1135
1140	5·799	0·7633708	·58833221	5·455	0·7368224	·58319323	1140
1145	5·787	0·7624516	·58850066	5·444	0·7359051	·58337572	1145
1150	5·775	0·7615365	·58866911	5·432	0·7349920	·58355820	1150
1155	5·763	0·7606256	·58883756	5·421	0·7340880	·58374069	1155
1160	5·751	0·7597188	·58900601	5·410	0·7331781	·58392318	1160
1165	5·739	0·7588159	·58917446	5·399	0·7322772	·58410567	1165
1170	5·727	0·7579171	·58934291	5·387	0·7313803	·58428815	1170
1175	5·715	0·7570222	·58951136	5·376	0·7304874	·58447064	1175
1180	5·703	0·7561313	·58967981	5·365	0·7295985	·58465313	1180
1185	5·692	0·7552442	·58984826	5·354	0·7287135	·58483562	1185
1190	5·680	0·7543611	·54001671	5·344	0·7278322	·58501810	1190
1195	5·669	0·7534817	·54018516	5·333	0·7269547	·58520059	1195
1200	5·657	0·7526061	·54035361	5·322	0·7260811	·58538308	1200

Sine of Inclina- tion (1 over)	n = .014			n = .015			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	5.622	0.7498530	.62078282	5.842	0.7277865	.66512445	955
960	5.607	0.7487541	.62097985	5.829	0.7266894	.66538501	960
965	5.598	0.7476612	.62117587	5.816	0.7255488	.66554558	965
970	5.579	0.7465741	.62137240	5.802	0.7244631	.66575614	970
975	5.565	0.7454928	.62156892	5.289	0.7233886	.66596670	975
980	5.552	0.7444172	.62176545	5.276	0.7223098	.66617726	980
985	5.538	0.7433472	.62196197	5.263	0.7212416	.66638783	985
990	5.524	0.7422827	.62215850	5.250	0.7201790	.66659839	990
995	5.511	0.7412289	.62235502	5.237	0.7191220	.66680895	995
1000	5.498	0.7401705	.62255155	5.225	0.7180704	.66701951	1000
1005	5.484	0.7391225	.62274807	5.212	0.7170243	.66723008	1005
1010	5.471	0.7380798	.62294460	5.200	0.7159845	.66744064	1010
1015	5.458	0.7370426	.62314112	5.187	0.7149481	.66765120	1015
1020	5.445	0.7360106	.62333765	5.175	0.7139179	.66786176	1020
1025	5.432	0.7349837	.62353417	5.163	0.7128929	.66807233	1025
1030	5.420	0.7339621	.62373070	5.151	0.7118730	.66828289	1030
1035	5.407	0.7329456	.62392722	5.139	0.7108584	.66849345	1035
1040	5.394	0.7319343	.62412375	5.127	0.7098488	.66870401	1040
1045	5.382	0.7309278	.62432027	5.115	0.7088442	.66891458	1045
1050	5.369	0.7299263	.62451680	5.103	0.7078445	.66912514	1050
1055	5.357	0.7289297	.62471332	5.092	0.7068497	.66933570	1055
1060	5.345	0.7279381	.62490985	5.080	0.7058599	.66954626	1060
1065	5.333	0.7269513	.62510637	5.068	0.7048750	.66975683	1065
1070	5.321	0.7259693	.62530290	5.057	0.7038947	.66996739	1070
1075	5.309	0.7249920	.62549942	5.046	0.7029193	.67017795	1075
1080	5.297	0.7240193	.62569595	5.034	0.7019484	.67038851	1080
1085	5.285	0.7230513	.62589247	5.023	0.7009823	.67059908	1085
1090	5.273	0.7220880	.62608900	5.012	0.7000208	.67080964	1090
1095	5.262	0.7211292	.62628552	5.001	0.6990639	.67102020	1095
1100	5.250	0.7201749	.62648205	4.990	0.6981114	.67123076	1100
1105	5.239	0.7192251	.62667857	4.979	0.6971634	.67144133	1105
1110	5.227	0.7182797	.62687510	4.968	0.6962199	.67165189	1110
1115	5.216	0.7173388	.62707162	4.958	0.6952808	.67186245	1115
1120	5.205	0.7164023	.62726815	4.947	0.6943460	.67207301	1120
1125	5.194	0.7154700	.62746467	4.936	0.6934155	.67228358	1125
1130	5.183	0.7145420	.62766120	4.926	0.6924894	.67249414	1130
1135	5.172	0.7136183	.62785772	4.915	0.6915675	.67270470	1135
1140	5.161	0.7126988	.62805425	4.905	0.6906499	.67291526	1140
1145	5.150	0.7117785	.62825077	4.895	0.6897364	.67312583	1145
1150	5.139	0.7108723	.62844730	4.885	0.6888270	.67333639	1150
1155	5.128	0.7099652	.62864382	4.874	0.6879217	.67354695	1155
1160	5.118	0.7090622	.62884035	4.864	0.6870205	.67375751	1160
1165	5.107	0.7081632	.62903687	4.853	0.6861233	.67396808	1165
1170	5.096	0.7072681	.62923340	4.844	0.6852301	.67417864	1170
1175	5.086	0.7063771	.62942992	4.834	0.6843409	.67438920	1175
1180	5.076	0.7054900	.62962645	4.825	0.6834557	.67459976	1180
1185	5.065	0.7046069	.62982297	4.815	0.6825744	.67481033	1185
1190	5.055	0.7037276	.63001950	4.805	0.6816969	.67502089	1190
1195	5.045	0.7028520	.63021602	4.795	0.6808231	.67523145	1195
1200	5.035	0.7019803	.63041255	4.786	0.6799532	.67544201	1200

Sine of Inclina- tion (1 over)	$n = \cdot 017$			$n = \cdot 020$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	4·882	0·6886592	·75880771	4·366	0·6400356	·88683260	955
960	4·870	0·6875657	·75404685	4·355	0·6389468	·88711335	960
965	4·858	0·6864780	·75428499	4·344	0·6378639	·88739410	965
970	4·846	0·6853962	·75452362	4·333	0·6367869	·88767485	970
975	4·834	0·6843202	·75476226	4·322	0·6357157	·88795560	975
980	4·822	0·6832499	·75500090	4·312	0·6346502	·88823635	980
985	4·810	0·6821852	·75523954	4·301	0·6335902	·88851710	985
990	4·788	0·6811260	·75547817	4·291	0·6325359	·88879785	990
995	4·787	0·6800725	·75571681	4·280	0·6314871	·88907860	995
1000	4·776	0·6790244	·75595545	4·270	0·6304437	·88935935	1000
1005	4·764	0·6779818	·75619409	4·260	0·6294059	·88964010	1005
1010	4·753	0·6769445	·75643272	4·250	0·6283784	·88992085	1010
1015	4·741	0·6759125	·75667186	4·240	0·6273462	·89020160	1015
1020	4·730	0·6748858	·75691000	4·230	0·6263242	·89048235	1020
1025	4·719	0·6738642	·75714864	4·220	0·6253074	·89076310	1025
1030	4·708	0·6728478	·75738727	4·210	0·6242959	·89104385	1030
1035	4·697	0·6718367	·75762591	4·200	0·6232895	·89132460	1035
1040	4·686	0·6708306	·75786455	4·191	0·6222882	·89160535	1040
1045	4·676	0·6698294	·75810319	4·181	0·6212918	·89188610	1045
1050	4·665	0·6688332	·75834182	4·172	0·6203003	·89216685	1050
1055	4·654	0·6678419	·75858046	4·162	0·6193188	·89244760	1055
1060	4·644	0·6668556	·75881910	4·153	0·6183322	·89272835	1060
1065	4·633	0·6658741	·75905774	4·143	0·6173555	·89300910	1065
1070	4·623	0·6648978	·75929637	4·134	0·6163835	·89328985	1070
1075	4·612	0·6639253	·75953501	4·125	0·6154163	·89357060	1075
1080	4·602	0·6629579	·75977365	4·116	0·6144587	·89385135	1080
1085	4·592	0·6619952	·76001229	4·107	0·6134957	·89413210	1085
1090	4·582	0·6610372	·76025092	4·098	0·6125425	·89441285	1090
1095	4·572	0·6600837	·76048956	4·089	0·6115937	·89469360	1095
1100	4·562	0·6591347	·76072820	4·080	0·6106495	·89497435	1100
1105	4·552	0·6581802	·76096684	4·071	0·6097098	·89525510	1105
1110	4·542	0·6572501	·76120547	4·062	0·6087744	·89553585	1110
1115	4·532	0·6563145	·76144411	4·054	0·6078435	·89581660	1115
1120	4·523	0·6553832	·76168275	4·045	0·6069169	·89609735	1120
1125	4·513	0·6544562	·76192139	4·036	0·6059947	·89637810	1125
1130	4·503	0·6535334	·76216002	4·028	0·6050768	·89665885	1130
1135	4·494	0·6526150	·76239866	4·019	0·6041631	·89693960	1135
1140	4·484	0·6517009	·76263730	4·011	0·6032537	·89722035	1140
1145	4·475	0·6507908	·76287594	4·003	0·6023484	·89750110	1145
1150	4·466	0·6498849	·76311457	3·994	0·6014472	·89778185	1150
1155	4·456	0·6489830	·76335321	3·986	0·6005501	·89806260	1155
1160	4·447	0·6480858	·76359185	3·978	0·5996571	·89834335	1160
1165	4·438	0·6471915	·76383049	3·970	0·5987681	·89862410	1165
1170	4·429	0·6463018	·76406912	3·962	0·5978831	·89890485	1170
1175	4·420	0·6454161	·76430776	3·954	0·5970021	·89918560	1175
1180	4·411	0·6445343	·76454640	3·946	0·5961251	·89946635	1180
1185	4·402	0·6436564	·76478504	3·938	0·5952519	·89974710	1185
1190	4·393	0·6427823	·76502367	3·930	0·5943826	·90002785	1190
1195	4·384	0·6419121	·76526231	3·922	0·5935170	·90030860	1195
1200	4·376	0·6410456	·76550095	3·914	0·5926553	·90058935	1200

Sine of Inclina- tion (1 over)	n = .0225			n = .0250			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	4.040	0.6088698	.99768668	3.779	0.5774211	1.1085408	955
960	4.080	0.6052842	.99800252	3.770	0.5768398	1.1088917	960
965	4.020	0.6042049	.99881836	3.761	0.5752635	1.1092426	965
970	4.010	0.6031815	.99863421	3.751	0.5741985	1.1095986	970
975	4.000	0.6020689	.99895005	3.742	0.5731298	1.1099445	975
980	3.990	0.6010021	.99926590	3.733	0.5720708	1.1102954	980
985	3.981	0.5999458	.99958174	3.724	0.5710178	1.1106464	985
990	3.971	0.5988951	.99989758	3.715	0.5699705	1.1109973	990
995	3.961	0.5978500	1.0002134	3.706	0.5689287	1.1113483	995
1000	3.952	0.5968102	1.0005293	3.697	0.5678923	1.1116992	1000
1005	3.943	0.5957760	1.0008451	3.689	0.5668610	1.1120501	1005
1010	3.933	0.5947471	1.0011610	3.680	0.5658359	1.1124011	1010
1015	3.924	0.5937236	1.0014768	3.671	0.5648157	1.1127520	1015
1020	3.915	0.5927052	1.0017926	3.663	0.5638008	1.1131029	1020
1025	3.906	0.5916921	1.0021085	3.654	0.5627910	1.1134539	1025
1030	3.897	0.5906841	1.0024243	3.646	0.5617864	1.1138048	1030
1035	3.888	0.5896814	1.0027402	3.637	0.5607870	1.1141558	1035
1040	3.879	0.5886888	1.0030560	3.629	0.5597927	1.1145067	1040
1045	3.870	0.5876910	1.0033719	3.621	0.5588033	1.1148576	1045
1050	3.861	0.5867031	1.0036877	3.613	0.5578188	1.1152086	1050
1055	3.852	0.5857202	1.0040036	3.604	0.5568398	1.1155595	1055
1060	3.844	0.5847422	1.0043194	3.596	0.5558646	1.1159104	1060
1065	3.835	0.5837691	1.0046352	3.588	0.5548948	1.1162614	1065
1070	3.826	0.5828007	1.0049511	3.580	0.5539298	1.1166123	1070
1075	3.818	0.5818372	1.0052669	3.572	0.5529696	1.1169633	1075
1080	3.810	0.5808782	1.0055828	3.565	0.5520139	1.1173142	1080
1085	3.801	0.5799237	1.0058986	3.557	0.5510630	1.1176651	1085
1090	3.793	0.5789748	1.0062145	3.549	0.5501167	1.1180161	1090
1095	3.785	0.5780291	1.0065303	3.541	0.5491749	1.1183670	1095
1100	3.776	0.5770885	1.0068461	3.534	0.5482376	1.1187179	1100
1105	3.768	0.5761524	1.0071620	3.526	0.5473048	1.1190689	1105
1110	3.760	0.5752206	1.0074778	3.519	0.5463764	1.1194198	1110
1115	3.752	0.5742934	1.0077937	3.511	0.5454525	1.1197708	1115
1120	3.744	0.5733705	1.0081095	3.504	0.5445329	1.1201217	1120
1125	3.736	0.5724518	1.0084254	3.496	0.5436178	1.1204726	1125
1130	3.729	0.5715374	1.0087412	3.489	0.5427066	1.1208236	1130
1135	3.721	0.5706278	1.0090571	3.482	0.5417999	1.1211745	1135
1140	3.713	0.5697216	1.0093729	3.475	0.5408974	1.1215254	1140
1145	3.705	0.5688199	1.0096887	3.467	0.5399991	1.1218764	1145
1150	3.698	0.5679223	1.0100046	3.460	0.5391049	1.1222273	1150
1155	3.690	0.5670289	1.0103204	3.453	0.5382147	1.1225783	1155
1160	3.682	0.5661395	1.0106363	3.446	0.5373287	1.1229292	1160
1165	3.675	0.5652541	1.0109521	3.439	0.5364466	1.1232801	1165
1170	3.668	0.5643727	1.0112680	3.432	0.5355685	1.1236311	1170
1175	3.660	0.5634953	1.0115838	3.425	0.5346945	1.1239820	1175
1180	3.653	0.5626219	1.0118996	3.418	0.5338244	1.1243329	1180
1185	3.645	0.5617524	1.0122155	3.412	0.5329582	1.1246839	1185
1190	3.638	0.5608866	1.0125313	3.405	0.5320958	1.1250348	1190
1195	3.631	0.5600246	1.0128472	3.398	0.5312372	1.1253858	1195
1200	3.624	0.5591665	1.0131630	3.391	0.5303824	1.1257367	1200

Sine of Inclina- tion (1 over)	$n = \cdot 0275$			$n = \cdot 030$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	8·566	0·5522118	1·2198948	8·889	0·5800248	1·3802489	955
960	8·557	0·5511327	1·2197809	8·880	0·5289485	1·3806700	960
965	8·549	0·5500600	1·2201669	8·872	0·5278787	1·3810912	965
970	8·540	0·5489981	1·2205529	8·864	0·5268147	1·3815128	970
975	8·531	0·5479820	1·2209890	8·855	0·5257565	1·3819384	975
980	8·523	0·5468766	1·2218250	8·847	0·5247040	1·3828545	980
985	8·514	0·5458267	1·2217110	8·839	0·5236570	1·3827757	985
990	8·506	0·5447825	1·2220970	8·831	0·5226157	1·3831968	990
995	8·497	0·5437439	1·2224881	8·823	0·5215800	1·3836179	995
1000	8·489	0·5427106	1·2228691	8·816	0·5205496	1·3840390	1000
1005	8·481	0·5416829	1·2232551	8·808	0·5195248	1·3844602	1005
1010	8·473	0·5406604	1·2236412	8·800	0·5185052	1·3848813	1010
1015	8·465	0·5396434	1·2240272	8·792	0·5174910	1·3853024	1015
1020	8·456	0·5386315	1·2244132	8·785	0·5164820	1·3857235	1020
1025	8·448	0·5376248	1·2247998	8·777	0·5154782	1·3861447	1025
1030	8·441	0·5366283	1·2251853	8·769	0·5144797	1·3865658	1030
1035	8·433	0·5356270	1·2255713	8·762	0·5134863	1·3869869	1035
1040	8·425	0·5346358	1·2259574	8·755	0·5124979	1·3874080	1040
1045	8·417	0·5336495	1·2263434	8·747	0·5115144	1·3878292	1045
1050	8·409	0·5326681	1·2267294	8·740	0·5105360	1·3882503	1050
1055	8·402	0·5316917	1·2271155	8·733	0·5095625	1·3886714	1055
1060	8·394	0·5307202	1·2275015	8·725	0·5085938	1·3890925	1060
1065	8·387	0·5297535	1·2278875	8·718	0·5076301	1·3895137	1065
1070	8·379	0·5287916	1·2282735	8·711	0·5066710	1·3899348	1070
1075	8·372	0·5278344	1·2286596	8·704	0·5057167	1·3803559	1075
1080	8·364	0·5268819	1·2290456	8·197	0·5047670	1·3407770	1080
1085	8·357	0·5259340	1·2294316	8·190	0·5038221	1·3411982	1085
1090	8·350	0·5249909	1·2298177	8·183	0·5028818	1·3416193	1090
1095	8·342	0·5240522	1·2302037	8·176	0·5019460	1·3420404	1095
1100	8·335	0·5231180	1·2305897	8·170	0·5010147	1·3424615	1100
1105	8·328	0·5221888	1·2309758	8·163	0·5000879	1·3428827	1105
1110	8·321	0·5212630	1·2313618	8·156	0·4991654	1·3433038	1110
1115	8·314	0·5203422	1·2317478	8·150	0·4982475	1·3437249	1115
1120	8·307	0·5194257	1·2321339	8·143	0·4973339	1·3441460	1120
1125	8·300	0·5185135	1·2325199	8·136	0·4964246	1·3445672	1125
1130	8·293	0·5176055	1·2329059	8·130	0·4955195	1·3449883	1130
1135	8·286	0·5167019	1·2332920	8·123	0·4946187	1·3454094	1135
1140	8·279	0·5158026	1·2336780	8·117	0·4937223	1·3458305	1140
1145	8·273	0·5149078	1·2340640	8·110	0·4928299	1·3462517	1145
1150	8·266	0·5140162	1·2344500	8·104	0·4919416	1·3466728	1150
1155	8·259	0·5131219	1·2348361	8·098	0·4910574	1·3470939	1155
1160	8·253	0·5122461	1·2352221	8·092	0·4901778	1·3475150	1160
1165	8·246	0·5113672	1·2356081	8·085	0·4893012	1·3479362	1165
1170	8·240	0·5104922	1·2359942	8·079	0·4884291	1·3483573	1170
1175	8·233	0·5096212	1·2363802	8·073	0·4875610	1·3487784	1175
1180	8·227	0·5087542	1·2367662	8·067	0·4866969	1·3491995	1180
1185	8·220	0·5078911	1·2371523	8·061	0·4858366	1·3496207	1185
1190	8·214	0·5070318	1·2375383	8·055	0·4849302	1·3500418	1190
1195	8·208	0·5061768	1·2379243	8·049	0·4841276	1·3504629	1195
1200	8·201	0·5053246	1·2383104	8·043	0·4832787	1·3508840	1200

Sine of Inclina- tion (1 over)	n = .035			n = .050			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
955	8.110	0.4926935	1.5519571	2.607	0.4161616	2.2170815	955
960	8.102	0.4916229	1.5524484	2.601	0.4151082	2.2177834	960
965	8.094	0.4905583	1.5529897	2.594	0.4140509	2.2184853	965
970	8.087	0.4894995	1.5534310	2.588	0.4130043	2.2191871	970
975	8.079	0.4884466	1.5539228	2.582	0.4119635	2.2198890	975
980	8.072	0.4873993	1.5544186	2.576	0.4109284	2.2205909	980
985	8.064	0.4863576	1.5549049	2.570	0.4098989	2.2212928	985
990	8.057	0.4853215	1.5553962	2.564	0.4088750	2.2219946	990
995	8.050	0.4842910	1.5558876	2.558	0.4078567	2.2226965	995
1000	8.043	0.4832658	1.5563789	2.552	0.4068437	2.2233984	1000
1005	8.036	0.4822461	1.5568702	2.546	0.4058363	2.2241008	1005
1010	8.029	0.4812318	1.5573615	2.540	0.4048341	2.2248021	1010
1015	8.022	0.4802228	1.5578528	2.534	0.4038373	2.2255040	1015
1020	8.015	0.4792190	1.5583441	2.528	0.4028457	2.2262059	1020
1025	8.008	0.4782205	1.5588354	2.523	0.4018593	2.2269078	1025
1030	8.001	0.4772271	1.5593267	2.517	0.4008781	2.2276096	1030
1035	2.994	0.4762389	1.5598181	2.511	0.3999021	2.2283115	1035
1040	2.987	0.4752558	1.5603094	2.506	0.3989311	2.2290134	1040
1045	2.980	0.4742776	1.5608007	2.500	0.3979650	2.2297153	1045
1050	2.974	0.4733042	1.5612920	2.495	0.3970039	2.2304171	1050
1055	2.967	0.4723359	1.5617833	2.489	0.3960477	2.2311190	1055
1060	2.961	0.4713725	1.5622746	2.484	0.3950964	2.2318209	1060
1065	2.954	0.4704139	1.5627659	2.478	0.3941500	2.2325228	1065
1070	2.948	0.4694600	1.5632572	2.473	0.3932038	2.2332246	1070
1075	2.941	0.4685110	1.5637486	2.468	0.3922714	2.2339265	1075
1080	2.935	0.4675665	1.5642399	2.462	0.3913390	2.2346284	1080
1085	2.928	0.4666267	1.5647312	2.457	0.3904113	2.2353303	1085
1090	2.922	0.4656916	1.5652225	2.452	0.3894883	2.2360321	1090
1095	2.916	0.4647609	1.5657138	2.447	0.3885698	2.2367340	1095
1100	2.910	0.4638348	1.5662051	2.441	0.3876558	2.2374359	1100
1105	2.903	0.4629132	1.5666964	2.436	0.3867463	2.2381378	1105
1110	2.897	0.4619960	1.5671877	2.431	0.3858412	2.2388396	1110
1115	2.891	0.4610832	1.5676791	2.426	0.3849405	2.2395415	1115
1120	2.885	0.4601748	1.5681704	2.421	0.3840442	2.2402434	1120
1125	2.879	0.4592706	1.5686617	2.416	0.3831521	2.2409453	1125
1130	2.873	0.4583707	1.5691530	2.411	0.3822643	2.2416471	1130
1135	2.867	0.4574751	1.5696443	2.406	0.3813808	2.2423490	1135
1140	2.861	0.4565838	1.5701356	2.402	0.3805016	2.2430509	1140
1145	2.856	0.4556966	1.5706269	2.397	0.3796265	2.2437528	1145
1150	2.850	0.4548135	1.5711182	2.392	0.3787554	2.2444546	1150
1155	2.844	0.4539345	1.5716096	2.387	0.3778885	2.2451565	1155
1160	2.838	0.4530595	1.5721009	2.382	0.3770256	2.2458584	1160
1165	2.833	0.4521886	1.5725922	2.378	0.3761667	2.2465603	1165
1170	2.827	0.4513217	1.5730835	2.373	0.3753118	2.2472621	1170
1175	2.821	0.4504587	1.5735748	2.368	0.3744609	2.2479640	1175
1180	2.816	0.4495997	1.5740661	2.364	0.3736140	2.2486659	1180
1185	2.810	0.4487447	1.5745574	2.359	0.3727710	2.2493678	1185
1190	2.805	0.4478934	1.5750487	2.355	0.3719318	2.2500696	1190
1195	2.799	0.4470459	1.5755401	2.350	0.3710963	2.2507715	1195
1200	2.794	0.4462022	1.5760314	2.346	0.3702646	2.2514734	1200

Sine of Inclina- tion (1 over)	$n = \cdot009$			$n = \cdot010$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	7·095	0·8509741	·40589155	6·516	0·8139530	·45048505	1205
1210	7·081	0·8500996	·40551788	6·508	0·8130807	·45057543	1210
1215	7·067	0·8492288	·40564422	6·490	0·8122122	·45071580	1215
1220	7·053	0·8483618	·40577056	6·477	0·8113473	·45085618	1220
1225	7·039	0·8474984	·40589660	6·464	0·8104862	·45099655	1225
1230	7·025	0·8466387	·40602823	6·451	0·8096286	·45113693	1230
1235	7·011	0·8457826	·40614957	6·438	0·8087747	·45127730	1235
1240	6·997	0·8449800	·40627591	6·426	0·8079243	·45141768	1240
1245	6·984	0·8440809	·40640225	6·413	0·8070775	·45155805	1245
1250	6·970	0·8432853	·40652858	6·401	0·8062340	·45169843	1250
1255	6·957	0·8423931	·40665492	6·388	0·8053940	·45183880	1255
1260	6·943	0·8415545	·40678126	6·376	0·8045575	·45197918	1260
1265	6·930	0·8407192	·40690760	6·364	0·8037245	·45211955	1265
1270	6·917	0·8398878	·40703393	6·352	0·8028949	·45225993	1270
1275	6·903	0·8390589	·40716027	6·340	0·8020686	·45240030	1275
1280	6·890	0·8382337	·40728661	6·328	0·8012456	·45254068	1280
1285	6·877	0·8374119	·40741295	6·316	0·8004259	·45268105	1285
1290	6·864	0·8365933	·40753928	6·304	0·7996096	·45282143	1290
1295	6·851	0·8357780	·40766562	6·292	0·7987965	·45296180	1295
1300	6·839	0·8349659	·40779196	6·280	0·7979866	·45310218	1300
1305	6·826	0·8341570	·40791830	6·269	0·7971799	·45324255	1305
1310	6·813	0·8333514	·40804463	6·257	0·7963765	·45338293	1310
1315	6·801	0·8325489	·40817097	6·246	0·7955762	·45352330	1315
1320	6·788	0·8317495	·40829731	6·234	0·7947790	·45366368	1320
1325	6·776	0·8309532	·40842365	6·223	0·7939849	·45380405	1325
1330	6·763	0·8301600	·40854998	6·211	0·7931939	·45394443	1330
1335	6·751	0·8293699	·40867632	6·200	0·7924060	·45408480	1335
1340	6·739	0·8285829	·40880266	6·189	0·7916212	·45422518	1340
1345	6·727	0·8277989	·40892900	6·178	0·7908394	·45436555	1345
1350	6·715	0·8270179	·40905533	6·167	0·7900605	·45450593	1350
1355	6·703	0·8262398	·40918167	6·156	0·7892846	·45464630	1355
1360	6·691	0·8254648	·40930801	6·145	0·7885118	·45478668	1360
1365	6·679	0·8246927	·40943435	6·134	0·7877419	·45492705	1365
1370	6·667	0·8239234	·40956068	6·123	0·7869748	·45506743	1370
1375	6·655	0·8231571	·40968702	6·112	0·7862106	·45520780	1375
1380	6·643	0·8223936	·40981336	6·102	0·7854493	·45534818	1380
1385	6·632	0·8216329	·40993970	6·091	0·7846908	·45548855	1385
1390	6·620	0·8208750	·41006603	6·080	0·7839352	·45562893	1390
1395	6·609	0·8201200	·41019237	6·070	0·7831824	·45576930	1395
1400	6·597	0·8193678	·41031871	6·059	0·7824324	·45590968	1400
1405	6·586	0·8186188	·41044505	6·049	0·7816851	·45605005	1405
1410	6·575	0·8178716	·41057138	6·039	0·7809406	·45619043	1410
1415	6·563	0·8171277	·41069772	6·028	0·7801989	·45633080	1415
1420	6·552	0·8163865	·41082406	6·018	0·7794599	·45647118	1420
1425	6·541	0·8156479	·41095040	6·008	0·7787285	·45661155	1425
1430	6·530	0·8149121	·41107673	5·998	0·7779897	·45675193	1430
1435	6·519	0·8141787	·41120307	5·988	0·7772587	·45689230	1435
1440	6·508	0·8134482	·41132941	5·978	0·7765303	·45703268	1440
1445	6·497	0·8127202	·41145575	5·968	0·7758045	·45717305	1445
1450	6·486	0·8119948	·41158208	5·958	0·7750812	·45731343	1450

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	5·041	0·7811248	·49547856	5·846	0·7517848	·54052206	1205
1210	5·029	0·7802542	·49568297	5·835	0·7508662	·54069051	1210
1215	5·017	0·7793879	·49578788	5·823	0·7500018	·54085896	1215
1220	5·005	0·7785252	·49594179	5·812	0·7491411	·54102741	1220
1225	5·993	0·7776661	·49609621	5·801	0·7482840	·54119586	1225
1230	5·982	0·7768106	·49625062	5·590	0·7474806	·54136481	1230
1235	5·970	0·7759588	·49640508	5·579	0·7465808	·54153276	1235
1240	5·958	0·7751105	·49655944	5·568	0·7457846	·54170121	1240
1245	5·947	0·7742658	·49671886	5·558	0·7448919	·54186966	1245
1250	5·935	0·7734244	·49686827	5·547	0·7440526	·54203811	1250
1255	5·924	0·7725866	·49702268	5·536	0·7432168	·54220656	1255
1260	5·912	0·7717528	·49717709	5·526	0·7423845	·54237501	1260
1265	5·901	0·7709218	·49733151	5·515	0·7415556	·54254346	1265
1270	5·890	0·7700987	·49748592	5·505	0·7407301	·54271191	1270
1275	5·879	0·7692696	·49764038	5·494	0·7399080	·54288036	1275
1280	5·867	0·7684487	·49779474	5·484	0·7390892	·54304881	1280
1285	5·856	0·7676311	·49794916	5·474	0·7382736	·54321726	1285
1290	5·845	0·7668169	·49810357	5·463	0·7374614	·54338571	1290
1295	5·835	0·7660059	·49825798	5·453	0·7366524	·54355416	1295
1300	5·824	0·7651981	·49841239	5·443	0·7358467	·54372261	1300
1305	5·813	0·7643936	·49856681	5·433	0·7350442	·54389106	1305
1310	5·802	0·7635923	·49872122	5·423	0·7342448	·54405951	1310
1315	5·792	0·7627941	·49887563	5·413	0·7334487	·54422796	1315
1320	5·781	0·7619990	·49903004	5·403	0·7326556	·54439641	1320
1325	5·770	0·7612070	·49918446	5·393	0·7318657	·54456486	1325
1330	5·760	0·7604183	·49933887	5·384	0·7310789	·54473331	1330
1335	5·750	0·7596325	·49949328	5·374	0·7302951	·54490176	1335
1340	5·739	0·7588496	·49964769	5·364	0·7295144	·54507021	1340
1345	5·729	0·7580700	·49980211	5·355	0·7287368	·54523866	1345
1350	5·719	0·7572932	·49995652	5·345	0·7279620	·54540711	1350
1355	5·708	0·7565195	·50011098	5·336	0·7271903	·54557556	1355
1360	5·698	0·7557486	·50026534	5·326	0·7264215	·54574401	1360
1365	5·688	0·7549809	·50041976	5·317	0·7256558	·54591246	1365
1370	5·678	0·7542160	·50057417	5·308	0·7248928	·54608091	1370
1375	5·668	0·7534540	·50072858	5·298	0·7241328	·54624936	1375
1380	5·658	0·7526947	·50088299	5·289	0·7233756	·54641781	1380
1385	5·649	0·7519382	·50103741	5·280	0·7226213	·54658626	1385
1390	5·639	0·7511847	·50119182	5·271	0·7218699	·54675471	1390
1395	5·629	0·7504340	·50134623	5·262	0·7211212	·54692316	1395
1400	5·619	0·7496862	·50150064	5·253	0·7203752	·54709161	1400
1405	5·610	0·7489409	·50165506	5·244	0·7196320	·54726006	1405
1410	5·600	0·7481985	·50180947	5·235	0·7188916	·54742851	1410
1415	5·591	0·7474590	·50196388	5·226	0·7181541	·54759696	1415
1420	5·581	0·7467221	·50211829	5·217	0·7174192	·54776541	1420
1425	5·572	0·7459878	·50227271	5·208	0·7166869	·54793386	1425
1430	5·562	0·7452562	·50242712	5·199	0·7159573	·54810231	1430
1435	5·553	0·7445272	·50258153	5·191	0·7152304	·54827076	1435
1440	5·544	0·7438008	·50273594	5·182	0·7145062	·54843921	1440
1445	5·534	0·7430771	·50289036	5·174	0·7137845	·54860766	1445
1450	5·525	0·7423560	·50304477	5·165	0·7130654	·54877611	1450

Sine of Inclina- tion (1 over)	$n = \cdot 013$			$n = \cdot 014$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	5·311	0·7252118	·58556557	5·025	0·7011123	·68060907	1205
1210	5·301	0·7248452	·58574805	5·015	0·7002481	·68060560	1210
1215	5·290	0·7234827	·58598054	5·005	0·6998876	·68100212	1215
1220	5·280	0·7226240	·58611808	4·995	0·6985307	·68119865	1220
1225	5·269	0·7217689	·58629552	4·985	0·6976776	·68189517	1225
1230	5·259	0·7209175	·58647800	4·975	0·6968280	·68159170	1230
1235	5·249	0·7200697	·58666049	4·966	0·6959820	·68178822	1235
1240	5·239	0·7192254	·58684298	4·956	0·6951397	·68198475	1240
1245	5·229	0·7183846	·58702547	4·947	0·6943008	·68218127	1245
1250	5·219	0·7175478	·58720795	4·937	0·6934658	·68237780	1250
1255	5·209	0·7167184	·58739044	4·928	0·6926333	·68257482	1255
1260	5·199	0·7158881	·58757293	4·918	0·6918048	·68277085	1260
1265	5·189	0·7150561	·58775542	4·909	0·6909797	·68296737	1265
1270	5·179	0·7142325	·58793790	4·900	0·6901581	·68316390	1270
1275	5·169	0·7134124	·58812039	4·890	0·6893398	·68336042	1275
1280	5·159	0·7125955	·58830288	4·881	0·6885248	·68355695	1280
1285	5·150	0·7117819	·58848537	4·872	0·6877131	·68375347	1285
1290	5·140	0·7109717	·58866785	4·863	0·6869047	·68395000	1290
1295	5·131	0·7101647	·58885084	4·854	0·6860996	·68414652	1295
1300	5·121	0·7093609	·58903283	4·845	0·6852977	·68434305	1300
1305	5·112	0·7085603	·58921532	4·836	0·6844990	·68453957	1305
1310	5·102	0·7077629	·58939780	4·827	0·6837085	·68473610	1310
1315	5·093	0·7069687	·58958029	4·818	0·6829112	·68493262	1315
1320	5·084	0·7061776	·58976278	4·810	0·6821220	·68512915	1320
1325	5·074	0·7053897	·58994527	4·801	0·6813359	·68532567	1325
1330	5·065	0·7046048	·59012775	4·792	0·6805528	·68552220	1330
1335	5·056	0·7038230	·59031024	4·784	0·6797729	·68571872	1335
1340	5·047	0·7030443	·59049273	4·775	0·6789961	·68591525	1340
1345	5·038	0·7022685	·59067522	4·767	0·6782223	·68611177	1345
1350	5·029	0·7014957	·59085770	4·758	0·6774513	·68630830	1350
1355	5·020	0·7007259	·59104019	4·750	0·6766834	·68650482	1355
1360	5·011	0·6999591	·59122268	4·742	0·6759185	·68670135	1360
1365	5·003	0·6991953	·59140517	4·733	0·6751566	·68689787	1365
1370	4·994	0·6984343	·59158765	4·725	0·6743974	·68709440	1370
1375	4·985	0·6976763	·59177014	4·717	0·6736413	·68729092	1375
1380	4·976	0·6969210	·59195263	4·709	0·6728880	·68748745	1380
1385	4·968	0·6961686	·59213512	4·700	0·6721374	·68768397	1385
1390	4·959	0·6954191	·59231760	4·692	0·6713898	·68788050	1390
1395	4·951	0·6946723	·59250009	4·684	0·6706449	·68807702	1395
1400	4·942	0·6939284	·59268258	4·676	0·6699029	·68827355	1400
1405	4·934	0·6931872	·59286507	4·668	0·6691635	·68847007	1405
1410	4·925	0·6924487	·59304755	4·660	0·6684269	·68866660	1410
1415	4·917	0·6917131	·59323004	4·653	0·6676931	·68886312	1415
1420	4·909	0·6909802	·59341253	4·645	0·6669620	·68905965	1420
1425	4·901	0·6902498	·59359502	4·637	0·6662336	·68925617	1425
1430	4·892	·06895222	·59377750	4·629	0·6655078	·68945270	1430
1435	4·884	·06887973	·59395999	4·622	0·6647848	·68964922	1435
1440	4·876	·06880749	·59414248	4·614	0·6640643	·68984575	1440
1445	4·868	·06873551	·59432497	4·606	0·6633464	·64004227	1445
1450	4·860	·06866379	·59450745	4·599	0·6626311	·64023880	1450

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	4.776	0.6790871	.67565258	4.867	0.6401829	.76578959	1205
1210	4.767	0.6782246	.67586814	4.858	0.6398239	.76597822	1210
1215	4.757	0.6773659	.67607870	4.850	0.6384686	.76621686	1215
1220	4.748	0.6765109	.67628426	4.841	0.6376170	.76645550	1220
1225	4.739	0.6756596	.67649483	4.833	0.6367691	.76669414	1225
1230	4.729	0.6748117	.67670589	4.824	0.6359248	.76693277	1230
1235	4.720	0.6739676	.67691595	4.816	0.6350841	.76717141	1235
1240	4.711	0.6731270	.67712651	4.808	0.6342470	.76741005	1240
1245	4.702	0.6722900	.67733708	4.299	0.6334134	.76764869	1245
1250	4.693	0.6714563	.67754764	4.291	0.6325832	.76788782	1250
1255	4.684	0.6706262	.67775820	4.283	0.6317565	.76812596	1255
1260	4.675	0.6697995	.67796876	4.275	0.6309333	.76836460	1260
1265	4.666	0.6689762	.67817933	4.267	0.6301184	.76860324	1265
1270	4.658	0.6681564	.67838989	4.259	0.6292970	.76884187	1270
1275	4.649	0.6673399	.67860045	4.251	0.6284839	.76908051	1275
1280	4.640	0.6665267	.67881101	4.243	0.6276742	.76931915	1280
1285	4.631	0.6657169	.67902158	4.235	0.6268677	.76955779	1285
1290	4.623	0.6649103	.67923214	4.227	0.6260646	.76979642	1290
1295	4.614	0.6641070	.67944270	4.220	0.6252648	.77003506	1295
1300	4.606	0.6633069	.67965326	4.212	0.6244681	.77027370	1300
1305	4.597	0.6625100	.67986383	4.204	0.6236747	.77051234	1305
1310	4.589	0.6617163	.68007439	4.196	0.6228844	.77075097	1310
1315	4.581	0.6609258	.68028495	4.189	0.6220973	.77098961	1315
1320	4.572	0.6601384	.68049551	4.181	0.6213134	.77122825	1320
1325	4.564	0.6593541	.68070608	4.174	0.6205325	.77146689	1325
1330	4.556	0.6585729	.68091664	4.166	0.6197547	.77170552	1330
1335	4.548	0.6577948	.68112720	4.159	0.6189800	.77194416	1335
1340	4.540	0.6570198	.68133776	4.152	0.6182084	.77218280	1340
1345	4.532	0.6562478	.68154833	4.144	0.6174398	.77242144	1345
1350	4.524	0.6554787	.68175889	4.137	0.6166742	.77266007	1350
1355	4.516	0.6547126	.68196945	4.130	0.6159115	.77289871	1355
1360	4.508	0.6539495	.68218001	4.122	0.6151518	.77313735	1360
1365	4.500	0.6531898	.68239058	4.115	0.6143951	.77337599	1365
1370	4.492	0.6524320	.68260114	4.108	0.6136412	.77361462	1370
1375	4.484	0.6516777	.68281170	4.101	0.6128903	.77385326	1375
1380	4.476	0.6509261	.68302226	4.094	0.6121422	.77409190	1380
1385	4.469	0.6501774	.68323283	4.087	0.6113968	.77433054	1385
1390	4.461	0.6494316	.68344339	4.080	0.6106544	.77456917	1390
1395	4.453	0.6486885	.68365395	4.073	0.6099148	.77480781	1395
1400	4.446	0.6479483	.68386451	4.066	0.6091780	.77504645	1400
1405	4.438	0.6472107	.68407508	4.059	0.6084439	.77528509	1405
1410	4.431	0.6464760	.68428564	4.052	0.6077125	.77552372	1410
1415	4.423	0.6457440	.68449620	4.046	0.6069840	.77576236	1415
1420	4.416	0.6450146	.68470676	4.039	0.6062581	.77600100	1420
1425	4.408	0.6442880	.68491733	4.032	0.6055349	.77623964	1425
1430	4.401	0.6435640	.68512789	4.025	0.6048143	.77647827	1430
1435	4.394	0.6428428	.68533845	4.019	0.6040965	.77671691	1435
1440	4.387	0.6421241	.68554901	4.012	0.6033812	.77695555	1440
1445	4.379	0.6414080	.68575958	4.006	0.6026685	.77719419	1445
1450	4.372	0.6406945	.68597014	3.999	0.6019585	.77743282	1450

Sine of Inclina- tion (1 over)	<i>n</i> = .020			<i>n</i> = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	3·907	0·5917974	·90087010	3·617	0·5588122	1·0184789	1205
1210	3·899	0·5909431	·90115085	3·610	0·5574616	1·0187947	1210
1215	3·891	0·5900926	·90143160	3·603	0·5566146	1·0141106	1215
1220	3·884	0·5892457	·90171235	3·596	0·5557714	1·0144264	1220
1225	3·876	0·5884025	·90199310	3·589	0·5549318	1·0147422	1225
1230	3·869	0·5875680	·90227385	3·582	0·5540958	1·0150581	1230
1235	3·861	0·5867270	·90255460	3·575	0·5532635	1·0153739	1235
1240	3·854	0·5858947	·90283535	3·568	0·5524347	1·0156898	1240
1245	3·846	0·5850658	·90311610	3·561	0·5516094	1·0160056	1245
1250	3·839	0·5842403	·90339685	3·555	0·5507875	1·0163215	1250
1255	3·832	0·5834138	·90367760	3·548	0·5499691	1·0166373	1255
1260	3·825	0·5825998	·90395835	3·541	0·5491542	1·0169531	1260
1265	3·818	0·5817847	·90423910	3·535	0·5483428	1·0172690	1265
1270	3·810	0·5809730	·90451985	3·528	0·5475347	1·0175848	1270
1275	3·803	0·5801647	·90480060	3·522	0·5467299	1·0179007	1275
1280	3·796	0·5793597	·90508135	3·515	0·5459285	1·0182165	1280
1285	3·789	0·5785580	·90536210	3·509	0·5451304	1·0185324	1285
1290	3·782	0·5777595	·90564285	3·502	0·5443356	1·0188482	1290
1295	3·775	0·5769644	·90592360	3·496	0·5435440	1·0191641	1295
1300	3·769	0·5761725	·90620435	3·490	0·5427557	1·0194799	1300
1305	3·762	0·5753838	·90648510	3·483	0·5419705	1·0197957	1305
1310	3·755	0·5745982	·90676585	3·477	0·5411886	1·0201116	1310
1315	3·748	0·5738159	·90704660	3·471	0·5404098	1·0204274	1315
1320	3·741	0·5730366	·90732735	3·464	0·5396341	1·0207433	1320
1325	3·735	0·5722605	·90760810	3·458	0·5388616	1·0210591	1325
1330	3·728	0·5714875	·90788885	3·452	0·5380921	1·0213750	1330
1335	3·721	0·5707175	·90816960	3·446	0·5373257	1·0216908	1335
1340	3·715	0·5699506	·90845035	3·440	0·5365624	1·0220066	1340
1345	3·708	0·5691867	·90873110	3·434	0·5358022	1·0223225	1345
1350	3·702	0·5684257	·90901185	3·428	0·5350448	1·0226383	1350
1355	3·695	0·5676678	·90929260	3·422	0·5342904	1·0229542	1355
1360	3·689	0·5669128	·90957335	3·416	0·5335390	1·0232700	1360
1365	3·683	0·5661608	·90985410	3·410	0·5327906	1·0235859	1365
1370	3·676	0·5654116	·91013485	3·404	0·5320449	1·0239017	1370
1375	3·670	0·5646654	·91041560	3·399	0·5313028	1·0242176	1375
1380	3·664	0·5639220	·91069635	3·393	0·5305625	1·0245334	1380
1385	3·657	0·5631814	·91097710	3·387	0·5298254	1·0248492	1385
1390	3·651	0·5624437	·91125785	3·381	0·5290918	1·0251651	1390
1395	3·645	0·5617087	·91153860	3·376	0·5283599	1·0254809	1395
1400	3·639	0·5609766	·91181935	3·370	0·5276314	1·0257968	1400
1405	3·633	0·5602472	·91210010	3·364	0·5269055	1·0261126	1405
1410	3·627	0·5595206	·91238085	3·359	0·5261825	1·0264285	1410
1415	3·621	0·5587967	·91266160	3·353	0·5254623	1·0267443	1415
1420	3·615	0·5580756	·91294235	3·348	0·5247447	1·0270601	1420
1425	3·609	0·5573570	·91322310	3·342	0·5240297	1·0273760	1425
1430	3·603	0·5566412	·91350385	3·337	0·5233174	1·0276918	1430
1435	3·597	0·5559280	·91378460	3·331	0·5226078	1·0280077	1435
1440	3·591	0·5552175	·91406535	3·326	0·5219008	1·0283235	1440
1445	3·585	0·5545095	·91434610	3·320	0·5211964	1·0286394	1445
1450	3·579	0·5538040	·91462685	3·315	0·5204946	1·0289552	1450

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	8·385	0·5295814	1·1280876	8·195	0·5044766	1·2886964	1205
1210	8·378	0·5286841	1·1264886	8·189	0·5086824	1·2890624	1210
1215	8·372	0·5278405	1·1267895	8·188	0·5027918	1·2894685	1215
1220	8·365	0·5270005	1·1271404	8·177	0·5019550	1·2896545	1220
1225	8·359	0·5261648	1·1274914	8·170	0·5011218	1·2402405	1225
1230	8·352	0·5263816	1·1278428	8·164	0·5002928	1·2406265	1230
1235	8·346	0·5245026	1·1281938	8·158	0·4994668	1·2410126	1235
1240	8·339	0·5236772	1·1285442	8·152	0·4986489	1·2418986	1240
1245	8·338	0·5228552	1·1288951	8·146	0·4978250	1·2417846	1245
1250	8·327	0·5220866	1·1292461	8·140	0·4970095	1·2421707	1250
1255	8·321	0·5212215	1·1295970	8·135	0·4961976	1·2425567	1255
1260	8·314	0·5204099	1·1299479	8·129	0·4953891	1·2429427	1260
1265	8·308	0·5196018	1·1302989	8·128	0·4945840	1·2433288	1265
1270	8·302	0·5187970	1·1306498	8·117	0·4937822	1·2437148	1270
1275	8·296	0·5179956	1·1310008	8·112	0·4929889	1·2441008	1275
1280	8·290	0·5171975	1·1313517	8·106	0·4921888	1·2444869	1280
1285	8·284	0·5164026	1·1317026	8·100	0·4913917	1·2448729	1285
1290	8·278	0·5156111	1·1320536	8·095	0·4906087	1·2452589	1290
1295	8·272	0·5148229	1·1324045	8·089	0·4898236	1·2456450	1295
1300	8·266	0·5140379	1·1327554	8·083	0·4890416	1·2460310	1300
1305	8·260	0·5132561	1·1331064	8·078	0·4882628	1·2464170	1305
1310	8·254	0·5124774	1·1334573	8·072	0·4874872	1·2468030	1310
1315	8·249	0·5117020	1·1338083	8·067	0·4867149	1·2471891	1315
1320	8·243	0·5109296	1·1341592	8·062	0·4859456	1·2475751	1320
1325	8·237	0·5101603	1·1345101	8·056	0·4851794	1·2479611	1325
1330	8·231	0·5093942	1·1348611	8·051	0·4844168	1·2483472	1330
1335	8·226	0·5086311	1·1352120	8·045	0·4836562	1·2487332	1335
1340	8·220	0·5078712	1·1355629	8·040	0·4828993	1·2491192	1340
1345	8·215	0·5071142	1·1359139	8·035	0·4821444	1·2495053	1345
1350	8·209	0·5063601	1·1362648	8·030	0·4813944	1·2498913	1350
1355	8·203	0·5056090	1·1366158	8·024	0·4806463	1·2502773	1355
1360	8·198	0·5048609	1·1369667	8·019	0·4799013	1·2506634	1360
1365	8·192	0·5041158	1·1373176	8·014	0·4791592	1·2510494	1365
1370	8·187	0·5033735	1·1376686	8·009	0·4784199	1·2514354	1370
1375	8·182	0·5026341	1·1380195	8·004	0·4776837	1·2518215	1375
1380	8·176	0·5018976	1·1383704	2·999	0·4769503	1·2522075	1380
1385	8·171	0·5011639	1·1387214	2·994	0·4762196	1·2525935	1385
1390	8·165	0·5004331	1·1390723	2·989	0·4754918	1·2529795	1390
1395	8·160	0·4997050	1·1394233	2·984	0·4747668	1·2533656	1395
1400	8·155	0·4989797	1·1397742	2·979	0·4740446	1·2537516	1400
1405	8·150	0·4982572	1·1401251	2·974	0·4733251	1·2541376	1405
1410	8·144	0·4975374	1·1404761	2·969	0·4726068	1·2545237	1410
1415	8·139	0·4968204	1·1408270	2·964	0·4718944	1·2549097	1415
1420	8·134	0·4961062	1·1411779	2·959	0·4711832	1·2552957	1420
1425	8·129	0·4953945	1·1415289	2·954	0·4704746	1·2556818	1425
1430	8·124	0·4946855	1·1418798	2·950	0·4697686	1·2560678	1430
1435	8·119	0·4939792	1·1422308	2·945	0·4690654	1·2564538	1435
1440	8·114	0·4932755	1·1425817	2·940	0·4683647	1·2568399	1440
1445	8·109	0·4925744	1·1429326	2·935	0·4676667	1·2572259	1445
1450	8·104	0·4918759	1·1432836	2·931	0·4669712	1·2576119	1450

Sine of Inclina- tion (1 over)	$n = \cdot 030$			$n = \cdot 035$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1205	3·037	0·4824886	1·8518052	2·788	0·4453628	1·5765227	1205
1210	3·031	0·4815922	1·8517268	2·788	0·4445260	1·5770140	1210
1215	3·025	0·4807546	1·8521474	2·778	0·4436985	1·5775058	1215
1220	3·019	0·4799206	1·8525685	2·772	0·4428647	1·5779966	1220
1225	3·014	0·4790908	1·8529897	2·767	0·4420395	1·5784879	1225
1230	3·008	0·4782685	1·8534108	2·762	0·4412180	1·5789792	1230
1235	3·002	0·4774404	1·8538319	2·757	0·4404000	1·5794706	1235
1240	2·997	0·4766209	1·8542580	2·752	0·4395856	1·5799619	1240
1245	2·991	0·4758049	1·8546742	2·746	0·4387747	1·5804532	1245
1250	2·985	0·4749923	1·8550953	2·741	0·4379672	1·5809445	1250
1255	2·980	0·4741831	1·8555164	2·736	0·4371632	1·5814358	1255
1260	2·974	0·4733775	1·8559375	2·731	0·4363637	1·5819271	1260
1265	2·969	0·4725752	1·8563587	2·726	0·4355656	1·5824184	1265
1270	2·963	0·4717764	1·8567798	2·721	0·4347719	1·5829097	1270
1275	2·958	0·4709809	1·8572009	2·716	0·4339815	1·5834011	1275
1280	2·952	0·4701887	1·8576220	2·711	0·4331945	1·5838924	1280
1285	2·947	0·4693998	1·8580432	2·707	0·4324107	1·5843837	1285
1290	2·942	0·4686142	1·8584643	2·702	0·4316302	1·5848750	1290
1295	2·937	0·4678319	1·8588854	2·697	0·4308531	1·5853663	1295
1300	2·931	0·4670528	1·8593065	2·692	0·4300791	1·5858576	1300
1305	2·926	0·4662768	1·8597277	2·687	0·4293083	1·5863489	1305
1310	2·921	0·4655041	1·8601488	2·683	0·4285407	1·5868402	1310
1315	2·916	0·4647346	1·8605699	2·678	0·4277763	1·5873315	1315
1320	2·911	0·4639681	1·8609910	2·673	0·4270149	1·5878229	1320
1325	2·905	0·4632048	1·8614122	2·668	0·4262567	1·5883142	1325
1330	2·900	0·4624445	1·8618333	2·664	0·4255016	1·5888055	1330
1335	2·895	0·4616874	1·8622544	2·659	0·4247495	1·5892968	1335
1340	2·890	0·4609333	1·8626755	2·655	0·4240006	1·5897881	1340
1345	2·885	0·4601822	1·8630967	2·650	0·4232546	1·5902794	1345
1350	2·880	0·4594340	1·8635178	2·646	0·4225116	1·5907707	1350
1355	2·875	0·4586888	1·8639389	2·641	0·4217715	1·5912621	1355
1360	2·870	0·4579466	1·8643600	2·636	0·4210344	1·5917534	1360
1365	2·866	0·4572074	1·8647812	2·632	0·4203003	1·5922447	1365
1370	2·861	0·4564710	1·8652023	2·628	0·4195689	1·5927360	1370
1375	2·856	0·4557376	1·8656234	2·623	0·4188406	1·5932273	1375
1380	2·851	0·4550070	1·8660445	2·619	0·4181151	1·5937186	1380
1385	2·846	0·4542791	1·8664657	2·615	0·4173923	1·5942099	1385
1390	2·842	0·4535542	1·8668868	2·610	0·4166725	1·5947012	1390
1395	2·837	0·4528320	1·8673079	2·606	0·4159565	1·5951926	1395
1400	2·832	0·4521126	1·8677290	2·602	0·4152412	1·5956839	1400
1405	2·827	0·4513960	1·8681502	2·597	0·4145296	1·5961752	1405
1410	2·823	0·4506821	1·8685713	2·593	0·4138208	1·5966665	1410
1415	2·818	0·4499710	1·8689924	2·589	0·4131148	1·5971578	1415
1420	2·814	0·4492626	1·8694135	2·585	0·4124115	1·5976491	1420
1425	2·809	0·4485568	1·8698347	2·581	0·4117108	1·5981404	1425
1430	2·804	0·4478537	1·8702558	2·576	0·4110128	1·5986317	1430
1435	2·800	0·4471532	1·8706769	2·572	0·4103174	1·5991231	1435
1440	2·795	0·4464554	1·8710980	2·568	0·4096247	1·5996144	1440
1445	2·791	0·4457602	1·8715192	2·564	0·4089346	1·6001057	1445
1450	2·787	0·4450675	1·8719403	2·560	0·4082470	1·6005970	1450

Sine of Inclina- tion (1 over)	n = .050			Sine of Inclina- tion (1 over)	n = .009		
	N	log. N	D		N	log. N	D
1205	2·341	0·8694868	2·2521758	1455	6·475	0·8112720	·41170842
1210	2·337	0·8686126	2·2528771	1460	6·465	0·8105517	·41188476
1215	2·332	0·8677921	2·2535790	1465	6·454	0·8098840	·41196110
1220	2·328	0·8669752	2·2542809	1470	6·443	0·8091188	·41208743
1225	2·324	0·8661621	2·2549828	1475	6·433	0·8084062	·41221877
1230	2·319	0·8653526	2·2556846	1480	6·422	0·8076959	·41234011
1235	2·315	0·8645466	2·2563865	1485	6·412	0·8069882	·41246645
1240	2·311	0·8637442	2·2570884	1490	6·402	0·8062830	·41259278
1245	2·306	0·8629454	2·2577903	1495	6·391	0·8055802	·41271912
1250	2·302	0·8621499	2·2584921	1500	6·381	0·8048798	·41284546
1255	2·298	0·8613579	2·2591940	1505	6·371	0·8041818	·41297180
1260	2·294	0·8605694	2·2598959	1510	6·360	0·8034863	·41309818
1265	2·290	0·8597842	2·2605978	1515	6·350	0·8027932	·41322447
1270	2·286	0·8590025	2·2612996	1520	6·340	0·8021023	·41335081
1275	2·282	0·8582241	2·2620015	1525	6·330	0·8014139	·41347715
1280	2·277	0·8574491	2·2627034	1530	6·320	0·8007278	·41360348
1285	2·273	0·8566773	2·2634053	1535	6·310	0·8000440	·41372982
1290	2·269	0·8559088	2·2641071	1540	6·300	0·7993624	·41385616
1295	2·265	0·8551436	2·2648090	1545	6·290	0·7986832	·41398250
1300	2·261	0·8543815	2·2655109	1550	6·281	0·7980062	·41410883
1305	2·257	0·8536227	2·2662128	1555	6·271	0·7973316	·41423517
1310	2·254	0·8528670	2·2669146	1560	6·261	0·7966592	·41436151
1315	2·250	0·8521146	2·2676165	1565	6·252	0·7959889	·41448785
1320	2·246	0·8513652	2·2683184	1570	6·242	0·7953219	·41461418
1325	2·242	0·8506189	2·2690203	1575	6·232	0·7946551	·41474052
1330	2·238	0·8498757	2·2697221	1580	6·223	0·7939915	·41486686
1335	2·234	0·8491356	2·2704240	1585	6·214	0·7933301	·41499320
1340	2·230	0·8483986	2·2711259	1590	6·204	0·7926708	·41511953
1345	2·227	0·8476645	2·2718278	1595	6·195	0·7920137	·41524587
1350	2·223	0·8469334	2·2725296	1600	6·185	0·7913586	·41537221
1355	2·219	0·8462052	2·2732315	1605	6·176	0·7907057	·41549855
1360	2·216	0·8454800	2·2739334	1610	6·167	0·7900550	·41562488
1365	2·212	0·8447578	2·2746353	1615	6·158	0·7894063	·41575122
1370	2·208	0·8440384	2·2753371	1620	6·148	0·7887597	·41587756
1375	2·205	0·8433220	2·2760390	1625	6·139	0·7881151	·41600390
1380	2·201	0·8426084	2·2767409	1630	6·130	0·7874727	·41613023
1385	2·197	0·8418976	2·2774428	1635	6·121	0·7868322	·41625657
1390	2·194	0·8411896	2·2781446	1640	6·112	0·7861937	·41638291
1395	2·190	0·8404844	2·2788465	1645	6·103	0·7855573	·41650925
1400	2·187	0·8397821	2·2795484	1650	6·094	0·7849229	·41663558
1405	2·183	0·8390824	2·2802503	1655	6·085	0·7842906	·41676192
1410	2·180	0·8383855	2·2809521	1660	6·077	0·7836602	·41688826
1415	2·176	0·8376913	2·2816540	1665	6·068	0·7830317	·41701460
1420	2·173	0·8369999	2·2823559	1670	6·059	0·7824052	·41714093
1425	2·169	0·8363111	2·2830578	1675	6·050	0·7817807	·41726727
1430	2·166	0·8356249	2·2837596	1680	6·042	0·7811580	·41739361
1435	2·162	0·8349414	2·2844615	1685	6·033	0·7805373	·41751995
1440	2·159	0·8342606	2·2851634	1690	6·024	0·7799186	·41764628
1445	2·156	0·8335823	2·2858653	1695	6·016	0·7793016	·41777262
1450	2·152	0·8329066	2·2865671	1700	6·007	0·7786867	·41789896

Sine of Inclina- tion (1 over)	$n = \cdot 010$			$n = \cdot 011$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	5·948	0·7743606	·45745380	5·516	0·7416375	·50319918	1455
1460	5·938	0·7736426	·45759418	5·507	0·7409216	·50335359	1460
1465	5·928	0·7729270	·45773455	5·498	0·7402081	·50350801	1465
1470	5·919	0·7722140	·45787498	5·489	0·7394972	·50366242	1470
1475	5·909	0·7715036	·45801580	5·480	0·7387889	·50381688	1475
1480	5·899	0·7707955	·45815568	5·471	0·7380829	·50397124	1480
1485	5·890	0·7700901	·45829605	5·462	0·7373796	·50412566	1485
1490	5·880	0·7693871	·45843643	5·454	0·7366786	·50428007	1490
1495	5·871	0·7686864	·45857680	5·445	0·7359801	·50443448	1495
1500	5·861	0·7679882	·45871718	5·436	0·7352839	·50458889	1500
1505	5·852	0·7672924	·45881755	5·427	0·7345908	·50474331	1505
1510	5·843	0·7665990	·45899793	5·419	0·7338992	·50489772	1510
1515	5·833	0·7659081	·45918830	5·410	0·7332103	·50505213	1515
1520	5·824	0·7652195	·45927868	5·402	0·7325237	·50520654	1520
1525	5·815	0·7645333	·45941905	5·394	0·7318395	·50536096	1525
1530	5·806	0·7638493	·45955943	5·385	0·7311577	·50551537	1530
1535	5·797	0·7631676	·45969980	5·376	0·7304781	·50566978	1535
1540	5·787	0·7624883	·45984018	5·368	0·7298008	·50582419	1540
1545	5·778	0·7618112	·45998055	5·360	0·7291259	·50597861	1545
1550	5·769	0·7611364	·46012093	5·351	0·7284533	·50613302	1550
1555	5·761	0·7604640	·46026130	5·343	0·7277829	·50628743	1555
1560	5·752	0·7597937	·46040168	5·335	0·7271147	·50644184	1560
1565	5·743	0·7591256	·46054205	5·327	0·7264488	·50659626	1565
1570	5·734	0·7584598	·46068243	5·319	0·7257850	·50675067	1570
1575	5·725	0·7577962	·46082280	5·310	0·7251236	·50690508	1575
1580	5·717	0·7571349	·46096318	5·302	0·7244643	·50705949	1580
1585	5·708	0·7564756	·46110355	5·294	0·7238071	·50721391	1585
1590	5·699	0·7558185	·46124393	5·286	0·7231521	·50736832	1590
1595	5·691	0·7551635	·46138430	5·278	0·7224992	·50752273	1595
1600	5·682	0·7545106	·46152468	5·270	0·7218484	·50767714	1600
1605	5·674	0·7538599	·46166505	5·263	0·7211998	·50783156	1605
1610	5·665	0·7532114	·46180543	5·255	0·7205534	·50798597	1610
1615	5·657	0·7525649	·46194580	5·247	0·7199090	·50814038	1615
1620	5·648	0·7519205	·46208618	5·239	0·7192666	·50829479	1620
1625	5·640	0·7512781	·46222655	5·232	0·7186264	·50844921	1625
1630	5·632	0·7506378	·46236693	5·224	0·7179882	·50860362	1630
1635	5·623	0·7499995	·46250730	5·216	0·7173520	·50875803	1635
1640	5·615	0·7493632	·46264768	5·209	0·7167179	·50891244	1640
1645	5·607	0·7487290	·46278805	5·201	0·7160857	·50906686	1645
1650	5·599	0·7480968	·46292843	5·193	0·7154555	·50922127	1650
1655	5·591	0·7474666	·46306880	5·186	0·7148274	·50937568	1655
1660	5·583	0·7468384	·46320918	5·178	0·7142014	·50953009	1660
1665	5·575	0·7462121	·46334955	5·171	0·7135772	·50968451	1665
1670	5·567	0·7455878	·46348993	5·164	0·7129549	·50983892	1670
1675	5·559	0·7449654	·46363030	5·156	0·7123346	·50999333	1675
1680	5·551	0·7443449	·46377068	5·149	0·7117162	·51014774	1680
1685	5·543	0·7437264	·46391105	5·142	0·7110998	·51030216	1685
1690	5·535	0·7431098	·46405143	5·134	0·7104853	·51045667	1690
1695	5·527	0·7424951	·46419180	5·127	0·7098727	·51061098	1695
1700	5·519	0·7418823	·46433218	5·120	0·7092620	·51076539	1700

Sine of Inclina- tion (1 over)	n = .012			n = .013			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	5.156	0.7128488	.54894456	4.852	0.6859284	.59468994	1455
1460	5.148	0.7116349	.54911801	4.844	0.6852114	.59487243	1460
1465	5.140	0.7109234	.54928146	4.836	0.6845020	.59505492	1465
1470	5.131	0.7102145	.54944991	4.828	0.6837950	.59523740	1470
1475	5.123	0.7095061	.54961836	4.820	0.6830907	.59541989	1475
1480	5.115	0.7088043	.54978681	4.813	0.6823887	.59560238	1480
1485	5.106	0.7081030	.54995526	4.805	0.6816893	.59578487	1485
1490	5.098	0.7074041	.55012371	4.797	0.6809923	.59596735	1490
1495	5.090	0.7067076	.55029216	4.790	0.6802977	.59614984	1495
1500	5.082	0.7060185	.55046061	4.782	0.6796056	.59633233	1500
1505	5.074	0.7053219	.55062906	4.774	0.6789159	.59651482	1505
1510	5.066	0.7046327	.55079751	4.767	0.6782286	.59669730	1510
1515	5.058	0.7039459	.55096596	4.759	0.6775437	.59687979	1515
1520	5.050	0.7032613	.55113441	4.752	0.6768611	.59706228	1520
1525	5.042	0.7025792	.55130286	4.744	0.6761809	.59724477	1525
1530	5.034	0.7018993	.55147131	4.737	0.6755080	.59742725	1530
1535	5.026	0.7012218	.55163976	4.730	0.6748275	.59760974	1535
1540	5.018	0.7005466	.55180821	4.722	0.6741542	.59779223	1540
1545	5.010	0.6998736	.55197666	4.715	0.6734831	.59797472	1545
1550	5.003	0.6992029	.55214511	4.708	0.6728144	.59815720	1550
1555	4.995	0.6985346	.55231356	4.701	0.6721480	.59833969	1555
1560	4.987	0.6978684	.55248201	4.693	0.6714888	.59852218	1560
1565	4.980	0.6972045	.55265046	4.686	0.6708218	.59870467	1565
1570	4.972	0.6965427	.55281891	4.679	0.6701620	.59888715	1570
1575	4.965	0.6958833	.55298736	4.672	0.6695045	.59906964	1575
1580	4.957	0.6952260	.55315581	4.665	0.6688492	.59925213	1580
1585	4.950	0.6945708	.55332426	4.658	0.6681959	.59943462	1585
1590	4.942	0.6939179	.55349271	4.651	0.6675449	.59961710	1590
1595	4.935	0.6932671	.55366116	4.644	0.6668959	.59979959	1595
1600	4.927	0.6926183	.55382961	4.637	0.6662491	.59998207	1600
1605	4.920	0.6919717	.55399806	4.630	0.6656745	.60016457	1605
1610	4.913	0.6913272	.55416651	4.623	0.6649619	.60034705	1610
1615	4.906	0.6906848	.55433496	4.617	0.6643215	.60052954	1615
1620	4.898	0.6900445	.55450341	4.610	0.6636831	.60071203	1620
1625	4.891	0.6894062	.55467186	4.603	0.6630467	.60089452	1625
1630	4.884	0.6887700	.55484031	4.596	0.6624125	.60107700	1630
1635	4.877	0.6881358	.55500876	4.590	0.6617802	.60125949	1635
1640	4.870	0.6875036	.55517721	4.583	0.6611500	.60144198	1640
1645	4.863	0.6868736	.55534566	4.576	0.6605218	.60162447	1645
1650	4.856	0.6862455	.55551411	4.570	0.6598957	.60180695	1650
1655	4.849	0.6856194	.55568256	4.563	0.6592715	.60198944	1655
1660	4.842	0.6849953	.55585101	4.557	0.6586494	.60217193	1660
1665	4.835	0.6843731	.55601946	4.550	0.6580291	.60235442	1665
1670	4.828	0.6837529	.55618791	4.544	0.6574108	.60253690	1670
1675	4.821	0.6831346	.55635636	4.537	0.6567944	.60271939	1675
1680	4.814	0.6825182	.55652481	4.531	0.6561800	.60290188	1680
1685	4.807	0.6819038	.55669326	4.524	0.6555675	.60308437	1685
1690	4.801	0.6812912	.55686171	4.518	0.6549570	.60326686	1690
1695	4.794	0.6806806	.55703016	4.512	0.6543483	.60344934	1695
1700	4.787	0.6800719	.55719861	4.505	0.6537415	.60363183	1700

Sine of Inclina- tion (1 over)	$n = \cdot 014$			$n = \cdot 015$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	4·591	0·6619184	·64043532	4·365	0·6399936	·68618070	1455
1460	4·584	0·6612083	·64063185	4·358	0·6392754	·68639126	1460
1465	4·576	0·6605008	·64082837	4·351	0·6385696	·68660183	1465
1470	4·569	0·6597957	·64102490	4·344	0·6378663	·68681239	1470
1475	4·561	0·6590932	·64122142	4·337	0·6371656	·68702295	1475
1480	4·556	0·6583931	·64141795	4·330	0·6364673	·68723351	1480
1485	4·547	0·6576956	·64161447	4·323	0·6357716	·68744408	1485
1490	4·539	0·6570004	·64181100	4·316	0·6350783	·68765464	1490
1495	4·532	0·6563077	·64200752	4·309	0·6343874	·68786520	1495
1500	4·525	0·6556174	·64220405	4·302	0·6336989	·68807576	1500
1505	4·518	0·6549296	·64240057	4·295	0·6330129	·68828633	1505
1510	4·511	0·6542442	·64259710	4·289	0·6323292	·68849689	1510
1515	4·504	0·6535612	·64279362	4·282	0·6316480	·68870745	1515
1520	4·497	0·6528804	·64299015	4·275	0·6309691	·68891801	1520
1525	4·490	0·6522021	·64318667	4·269	0·6302926	·68912858	1525
1530	4·483	0·6515261	·64338320	4·262	0·6296184	·68933914	1530
1535	4·476	0·6508524	·64357972	4·255	0·6289464	·68954970	1535
1540	4·469	0·6501809	·64377625	4·249	0·6282768	·68976026	1540
1545	4·462	0·6495118	·64397277	4·242	0·6276095	·68997083	1545
1550	4·455	0·6488450	·64416930	4·236	0·6269444	·69018139	1550
1555	4·448	0·6481804	·64436582	4·230	0·6262817	·69039195	1555
1560	4·441	0·6475181	·64456235	4·223	0·6256211	·69060251	1560
1565	4·435	0·6468579	·64475887	4·217	0·6249628	·69081308	1565
1570	4·428	0·6461999	·64495540	4·210	0·6243066	·69102364	1570
1575	4·421	0·6455443	·64515192	4·204	0·6236528	·69123420	1575
1580	4·415	0·6448908	·64534845	4·198	0·6230011	·69144476	1580
1585	4·408	0·6442395	·64554497	4·191	0·6223516	·69165533	1585
1590	4·401	0·6435903	·64574150	4·185	0·6217042	·69186589	1590
1595	4·395	0·6429432	·64593802	4·179	0·6210589	·69207645	1595
1600	4·388	0·6422983	·64613455	4·173	0·6204158	·69228701	1600
1605	4·382	0·6416555	·64633107	4·167	0·6197748	·69249758	1605
1610	4·375	0·6410148	·64652760	4·160	0·6191359	·69270814	1610
1615	4·369	0·6403763	·64672412	4·154	0·6184991	·69291870	1615
1620	4·363	0·6397397	·64692065	4·148	0·6178643	·69312926	1620
1625	4·356	0·6391052	·64711717	4·142	0·6172316	·69333983	1625
1630	4·350	0·6384728	·64731370	4·136	0·6166010	·69355039	1630
1635	4·344	0·6378424	·64751022	4·130	0·6159724	·69376095	1635
1640	4·337	0·6372141	·64770675	4·124	0·6153458	·69397151	1640
1645	4·331	0·6365878	·64790327	4·118	0·6147213	·69418208	1645
1650	4·325	0·6359634	·64809980	4·112	0·6140988	·69439264	1650
1655	4·319	0·6353411	·64829632	4·107	0·6134783	·69460320	1655
1660	4·313	0·6347208	·64849285	4·101	0·6128598	·69481376	1660
1665	4·306	0·6341024	·64868937	4·095	0·6122432	·69502433	1665
1670	4·300	0·6334860	·64888590	4·089	0·6116285	·69523489	1670
1675	4·294	0·6328715	·64908242	4·083	0·6110158	·69544545	1675
1680	4·288	0·6322589	·64927895	4·078	0·6104050	·69565601	1680
1685	4·282	0·6316483	·64947547	4·072	0·6097962	·69586658	1685
1690	4·276	0·6310396	·64967200	4·066	0·6091893	·69607714	1690
1695	4·270	0·6304328	·64986852	4·061	0·6085842	·69628770	1695
1700	4·264	0·6298279	·65006505	4·055	0·6079811	·69649826	1700

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	3-993	0-6012510	.77767146	3-574	0-5581014	.91490760	1455
1460	3-986	0-6005462	.77791010	3-568	0-5524012	.91518835	1460
1465	3-980	0-5998488	.77814874	3-562	0-5517085	.91546910	1465
1470	3-973	0-5991439	.77838737	3-556	0-5510088	.91574985	1470
1475	3-967	0-5984467	.77862601	3-551	0-5508157	.91603060	1475
1480	3-961	0-5977518	.77886465	3-545	0-5496255	.91631135	1480
1485	3-954	0-5970595	.77910329	3-539	0-5489379	.91659210	1485
1490	3-948	0-5963696	.77934192	3-534	0-5482527	.91687285	1490
1495	3-942	0-5956821	.77958056	3-528	0-5475699	.91715360	1495
1500	3-935	0-5949970	.77981920	3-523	0-5468895	.91743435	1500
1505	3-929	0-5943143	.78005784	3-517	0-5462116	.91771510	1505
1510	3-923	0-5936341	.78029647	3-512	0-5455361	.91799585	1510
1515	3-917	0-5929563	.78053511	3-506	0-5448629	.91827660	1515
1520	3-911	0-5922808	.78077375	3-501	0-5441921	.91855735	1520
1525	3-905	0-5916077	.78101239	3-496	0-5435236	.91883810	1525
1530	3-899	0-5909369	.78125102	3-490	0-5428575	.91911885	1530
1535	3-893	0-5902683	.78148966	3-485	0-5421937	.91939960	1535
1540	3-887	0-5896021	.78172830	3-480	0-5415321	.91968035	1540
1545	3-881	0-5889382	.78196694	3-474	0-5408728	.91996110	1545
1550	3-875	0-5882765	.78220557	3-469	0-5402158	.92024185	1550
1555	3-869	0-5876172	.78244421	3-464	0-5395612	.92052260	1555
1560	3-863	0-5869601	.78268285	3-459	0-5389088	.92080335	1560
1565	3-857	0-5863051	.78292149	3-453	0-5382585	.92108410	1565
1570	3-852	0-5856524	.78316012	3-448	0-5376104	.92136485	1570
1575	3-856	0-5850019	.78339876	3-443	0-5369646	.92164560	1575
1580	3-840	0-5843537	.78363740	3-438	0-5363210	.92192635	1580
1585	3-834	0-5837075	.78387604	3-433	0-5356795	.92220710	1585
1590	3-829	0-5830635	.78411467	3-428	0-5350402	.92248785	1590
1595	3-823	0-5824217	.78435331	3-423	0-5344030	.92276860	1595
1600	3-818	0-5817819	.78459195	3-418	0-5337679	.92304935	1600
1605	3-812	0-5811443	.78483059	3-413	0-5331350	.92333010	1605
1610	3-806	0-5805088	.78506922	3-408	0-5325042	.92361085	1610
1615	3-801	0-5798754	.78530786	3-403	0-5318755	.92389160	1615
1620	3-795	0-5792440	.78554650	3-398	0-5312487	.92417235	1620
1625	3-790	0-5786147	.78578514	3-393	0-5306241	.92445310	1625
1630	3-784	0-5779875	.78602377	3-388	0-5300016	.92473385	1630
1635	3-779	0-5773623	.78626241	3-384	0-5293811	.92501460	1635
1640	3-773	0-5767391	.78650105	3-379	0-5287625	.92529535	1640
1645	3-768	0-5761180	.78673969	3-374	0-5281460	.92557610	1645
1650	3-763	0-5754989	.78697832	3-369	0-5275316	.92585685	1650
1655	3-757	0-5748818	.78721696	3-364	0-5269192	.92613760	1655
1660	3-752	0-5742667	.78745560	3-360	0-5263087	.92641835	1660
1665	3-747	0-5736535	.78769424	3-355	0-5257001	.92669910	1665
1670	3-741	0-5730428	.78793287	3-350	0-5250935	.92697985	1670
1675	3-736	0-5724329	.78817151	3-346	0-5244888	.92726060	1675
1680	3-731	0-5718255	.78841015	3-341	0-5238861	.92754135	1680
1685	3-726	0-5712200	.78864879	3-336	0-5232853	.92782210	1685
1690	3-721	0-5706165	.78888742	3-332	0-5226864	.92810285	1690
1695	3-715	0-5700149	.78912606	3-327	0-5220894	.92838360	1695
1700	3-710	0-5694151	.78936470	3-323	0-5214943	.92866435	1700

Sine of Inclination (1 over)	$n = \cdot 0225$			$n = \cdot 0250$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
1455	3·810	0·5197954	1·0292711	3·099	0·4911800	1·1486345	1455
1460	3·304	0·5190988	1·0295869	3·094	0·4904867	1·1489854	1460
1465	3·299	0·5184047	1·0299027	3·089	0·4897958	1·1443864	1465
1470	3·294	0·5177181	1·0302186	3·084	0·4891075	1·1446878	1470
1475	3·289	0·5170240	1·0305344	3·079	0·4884217	1·1450383	1475
1480	3·284	0·5163374	1·0308508	3·074	0·4877384	1·1453892	1480
1485	3·278	0·5156533	1·0311661	3·069	0·4870576	1·1457401	1485
1490	3·273	0·5149717	1·0314820	3·065	0·4863793	1·1460911	1490
1495	3·268	0·5142925	1·0317978	3·060	0·4857033	1·1464420	1495
1500	3·263	0·5136156	1·0321136	3·055	0·4850297	1·1467929	1500
1505	3·258	0·5129412	1·0324295	3·050	0·4843586	1·1471439	1505
1510	3·253	0·5122693	1·0327453	3·046	0·4836899	1·1474948	1510
1515	3·248	0·5115997	1·0330612	3·041	0·4830236	1·1478458	1515
1520	3·243	0·5109324	1·0333770	3·036	0·4823597	1·1481967	1520
1525	3·238	0·5102675	1·0336929	3·032	0·4816981	1·1485476	1525
1530	3·233	0·5096049	1·0340087	3·027	0·4810388	1·1488986	1530
1535	3·228	0·5089446	1·0343246	3·023	0·4803818	1·1492495	1535
1540	3·223	0·5082866	1·0346404	3·018	0·4797270	1·1496004	1540
1545	3·218	0·5076310	1·0349562	3·014	0·4790746	1·1499514	1545
1550	3·213	0·5069775	1·0352721	3·009	0·4784245	1·1503023	1550
1555	3·209	0·5063264	1·0355879	3·005	0·4777766	1·1506533	1555
1560	3·204	0·5056775	1·0359038	3·000	0·4771310	1·1510042	1560
1565	3·199	0·5050308	1·0362196	2·996	0·4764875	1·1513551	1565
1570	3·194	0·5043862	1·0365355	2·991	0·4758462	1·1517061	1570
1575	3·190	0·5037440	1·0368513	2·987	0·4752078	1·1520570	1575
1580	3·185	0·5031040	1·0371671	2·982	0·4745705	1·1524079	1580
1585	3·180	0·5024660	1·0374830	2·978	0·4739353	1·1527589	1585
1590	3·176	0·5018302	1·0377988	2·974	0·4733033	1·1531098	1590
1595	3·171	0·5011966	1·0371147	2·969	0·4726729	1·1534608	1595
1600	3·166	0·5005651	1·0374305	2·965	0·4720447	1·1538117	1600
1605	3·162	0·4999357	1·0377464	2·961	0·4714186	1·1541626	1605
1610	3·157	0·4993084	1·0380622	2·957	0·4707946	1·1545136	1610
1615	3·153	0·4986832	1·0383781	2·952	0·4701726	1·1548645	1615
1620	3·148	0·4980600	1·0386939	2·948	0·4695527	1·1552154	1620
1625	3·144	0·4974389	1·0390097	2·944	0·4689349	1·1555664	1625
1630	3·139	0·4968199	1·0393256	2·940	0·4683192	1·1559173	1630
1635	3·135	0·4962029	1·0396414	2·936	0·4677055	1·1562683	1635
1640	3·130	0·4955879	1·0399573	2·932	0·4670937	1·1566192	1640
1645	3·126	0·4949750	1·0402731	2·927	0·4664840	1·1569701	1645
1650	3·122	0·4943641	1·0405890	2·923	0·4658764	1·1573211	1650
1655	3·117	0·4937552	1·0409048	2·919	0·4652707	1·1576720	1655
1660	3·113	0·4931482	1·0412206	2·915	0·4646670	1·1580229	1660
1665	3·108	0·4925432	1·0415365	2·911	0·4640653	1·1583739	1665
1670	3·104	0·4919402	1·0418523	2·907	0·4634655	1·1587248	1670
1675	3·100	0·4913390	1·0421682	2·903	0·4628676	1·1590758	1675
1680	3·096	0·4907398	1·0424840	2·899	0·4622716	1·1594267	1680
1685	3·091	0·4901425	1·0427999	2·895	0·4616776	1·1597776	1685
1690	3·087	0·4895472	1·0431157	2·891	0·4610855	1·1601286	1690
1695	3·083	0·4889537	1·0434316	2·887	0·4604953	1·1604795	1695
1700	3·079	0·4883621	1·0437474	2·883	0·4599070	1·1608304	1700

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	2·926	0·4662783	1·2579980	2·782	0·4443775	1·8728614	1455
1460	2·921	0·4655880	1·2583840	2·778	0·4436900	1·8727825	1460
1465	2·917	0·4649002	1·2587700	2·773	0·4430051	1·8726207	1465
1470	2·912	0·4642149	1·2591560	2·769	0·4423226	1·8724628	1470
1475	2·908	0·4635322	1·2595421	2·765	0·4416427	1·8724049	1475
1480	2·903	0·4628519	1·2599281	2·760	0·4409652	1·8724467	1480
1485	2·899	0·4621742	1·2603141	2·756	0·4402908	1·8724882	1485
1490	2·894	0·4614989	1·2607002	2·752	0·4396178	1·8725303	1490
1495	2·888	0·4608260	1·2610862	2·748	0·4389477	1·87257304	1495
1500	2·885	0·4601554	1·2614722	2·743	0·4382800	1·87261515	1500
1505	2·881	0·4594874	1·2618583	2·739	0·4376148	1·87265727	1505
1510	2·876	0·4588218	1·2622443	2·735	0·4369519	1·8726988	1510
1515	2·872	0·4581585	1·2626303	2·731	0·4362915	1·87274149	1515
1520	2·867	0·4574976	1·2630164	2·727	0·4356334	1·87278360	1520
1525	2·863	0·4568390	1·2634024	2·723	0·4349776	1·87282572	1525
1530	2·859	0·4561827	1·2637884	2·718	0·4343242	1·87286783	1530
1535	2·854	0·4555287	1·2641745	2·714	0·4336780	1·87290994	1535
1540	2·850	0·4558770	1·2645605	2·710	0·4330241	1·87295205	1540
1545	2·846	0·4542276	1·2649465	2·706	0·4323775	1·87299417	1545
1550	2·842	0·4535805	1·2653325	2·702	0·4317332	1·8808628	1550
1555	2·837	0·4529357	1·2657186	2·698	0·4310912	1·8807839	1555
1560	2·833	0·4522931	1·2661046	2·694	0·4304514	1·8812060	1560
1565	2·829	0·4516527	1·2664906	2·690	0·4298137	1·8816262	1565
1570	2·825	0·4510144	1·2668767	2·686	0·4291783	1·8820473	1570
1575	2·821	0·4503785	1·2672627	2·683	0·4285452	1·8824684	1575
1580	2·817	0·4497447	1·2676487	2·679	0·4279143	1·8828895	1580
1585	2·813	0·4491131	1·2680348	2·675	0·4272855	1·8833107	1585
1590	2·809	0·4484836	1·2684208	2·671	0·4266588	1·8837318	1590
1595	2·805	0·4478562	1·2688068	2·667	0·4260343	1·8841529	1595
1600	2·800	0·4472310	1·2691929	2·663	0·4254118	1·8845740	1600
1605	2·796	0·4466079	1·2695789	2·659	0·4247915	1·8849952	1605
1610	2·792	0·4459869	1·2699649	2·656	0·4241733	1·8854163	1610
1615	2·788	0·4453680	1·2703510	2·652	0·4235572	1·8858374	1615
1620	2·785	0·4447511	1·2707370	2·648	0·4229431	1·8862585	1620
1625	2·781	0·4441363	1·2711230	2·644	0·4223311	1·8866797	1625
1630	2·777	0·4435236	1·2715090	2·641	0·4217212	1·8871008	1630
1635	2·773	0·4429129	1·2718951	2·637	0·4211133	1·8875219	1635
1640	2·769	0·4423042	1·2722811	2·633	0·4205073	1·8879430	1640
1645	2·765	0·4416975	1·2726671	2·630	0·4199035	1·8883642	1645
1650	2·761	0·4410929	1·2730532	2·626	0·4193017	1·8887853	1650
1655	2·757	0·4404902	1·2734392	2·622	0·4187018	1·8892064	1655
1660	2·754	0·4398895	1·2738252	2·619	0·4181039	1·8896275	1660
1665	2·750	0·4392908	1·2742113	2·615	0·4175080	1·8900487	1665
1670	2·746	0·4386940	1·2745973	2·612	0·4169140	1·8904698	1670
1675	2·742	0·4380992	1·2749833	2·608	0·4163218	1·8908909	1675
1680	2·738	0·4375062	1·2753694	2·605	0·4157317	1·8913120	1680
1685	2·735	0·4369152	1·2757554	2·601	0·4151435	1·8917332	1685
1690	2·731	0·4363261	1·2761414	2·598	0·4145572	1·8921543	1690
1695	2·727	0·4357389	1·2765275	2·594	0·4139728	1·8925754	1695
1700	2·724	0·4351536	1·2769135	2·591	0·4133903	1·8929965	1700

Sine of Inclina- tion (1 over)	$n = \cdot 035$			$n = \cdot 050$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1455	2·556	0·4075620	1·6010883	2·149	0·8322334	2·2872690	1455
1460	2·552	0·4068797	1·6015796	2·146	0·8315629	2·2879709	1460
1465	2·548	0·4061998	1·6020709	2·142	0·8308949	2·2886728	1465
1470	2·544	0·4055224	1·6025622	2·139	0·8302293	2·2893746	1470
1475	2·540	0·4048476	1·6030536	2·136	0·8295663	2·2900765	1475
1480	2·536	0·4041752	1·6035449	2·133	0·8289058	2·2907784	1480
1485	2·532	0·4035053	1·6040362	2·129	0·8282477	2·2914803	1485
1490	2·528	0·4028379	1·6045275	2·126	0·8275921	2·2921821	1490
1495	2·524	0·4021729	1·6050188	2·123	0·8269389	2·2928840	1495
1500	2·521	0·4015102	1·6055101	2·120	0·8262881	2·2935859	1500
1505	2·517	0·4008501	1·6060014	2·117	0·8256397	2·2942878	1505
1510	2·513	0·4001923	1·6064927	2·113	0·8249937	2·2949896	1510
1515	2·509	0·3995369	1·6069841	2·110	0·8243501	2·2956915	1515
1520	2·505	0·3988839	1·6074754	2·107	0·8237088	2·2963934	1520
1525	2·502	0·3982332	1·6079667	2·104	0·8230699	2·2970953	1525
1530	2·498	0·3975847	1·6084580	2·101	0·8224333	2·2977971	1530
1535	2·494	0·3969386	1·6089493	2·098	0·8217990	2·2984990	1535
1540	2·491	0·3962948	1·6094406	2·095	0·8211669	2·2992009	1540
1545	2·487	0·3956533	1·6099319	2·092	0·8205372	2·2999028	1545
1550	2·483	0·3950141	1·6104232	2·089	0·8199097	2·3006046	1550
1555	2·480	0·3943771	1·6109146	2·086	0·8192846	2·3013065	1555
1560	2·476	0·3937423	1·6114059	2·083	0·8186616	2·3020084	1560
1565	2·472	0·3931098	1·6118972	2·080	0·8180408	2·3027103	1565
1570	2·469	0·3924794	1·6123885	2·077	0·8174222	2·3034121	1570
1575	2·465	0·3918513	1·6128798	2·074	0·8168058	2·3041140	1575
1580	2·462	0·3912254	1·6133711	2·071	0·8161917	2·3048159	1580
1585	2·458	0·3906016	1·6138624	2·068	0·8155796	2·3055178	1585
1590	2·455	0·3899800	1·6143537	2·065	0·8149698	2·3062196	1590
1595	2·451	0·3893605	1·6148451	2·062	0·8143620	2·3069215	1595
1600	2·448	0·3887431	1·6153364	2·059	0·8137563	2·3076234	1600
1605	2·444	0·3881279	1·6158277	2·057	0·8131528	2·3083253	1605
1610	2·441	0·3875147	1·6163190	2·054	0·8125514	2·3090271	1610
1615	2·437	0·3869036	1·6168103	2·051	0·8119521	2·3097290	1615
1620	2·434	0·3862946	1·6173016	2·048	0·8113547	2·3104309	1620
1625	2·430	0·3856876	1·6177929	2·045	0·8107595	2·3111328	1625
1630	2·427	0·3850827	1·6182842	2·043	0·8101663	2·3118346	1630
1635	2·424	0·3844799	1·6187756	2·040	0·8095752	2·3125365	1635
1640	2·420	0·3838790	1·6192669	2·037	0·8089860	2·3132384	1640
1645	2·417	0·3832802	1·6197582	2·034	0·8083989	2·3139403	1645
1650	2·414	0·3826834	1·6202495	2·031	0·8078138	2·3146421	1650
1655	2·410	0·3820886	1·6207408	2·029	0·8072306	2·3153440	1655
1660	2·407	0·3814957	1·6212321	2·026	0·8066495	2·3160459	1660
1665	2·404	0·3809048	1·6217234	2·023	0·8060702	2·3167478	1665
1670	2·401	0·3803158	1·6222147	2·021	0·8054930	2·3174496	1670
1675	2·397	0·3797287	1·6227061	2·018	0·8049176	2·3181515	1675
1680	2·394	0·3791436	1·6231974	2·015	0·8043441	2·3188534	1680
1685	2·391	0·3785604	1·6236887	2·013	0·8037726	2·3195553	1685
1690	2·388	0·3779791	1·6241800	2·010	0·8032030	2·3202571	1690
1695	2·385	0·3773997	1·6246713	2·007	0·8026352	2·3209590	1695
1700	2·381	0·3768222	1·6251626	2·005	0·8020694	2·3216609	1700

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	5.999	0.7780786	.41802581	5.512	0.7412714	.46447255	1705
1710	5.990	0.7774623	.41815164	5.504	0.7406623	.46461298	1710
1715	5.982	0.7768529	.41827798	5.496	0.7400550	.46475330	1715
1720	5.974	0.7762454	.41840432	5.488	0.7394497	.46489368	1720
1725	5.965	0.7756397	.41853066	5.481	0.7388462	.46503405	1725
1730	5.957	0.7750358	.41865699	5.473	0.7382445	.46517443	1730
1735	5.949	0.7744337	.41878333	5.466	0.7376446	.46531480	1735
1740	5.941	0.7738334	.41890967	5.458	0.7370464	.46545518	1740
1745	5.932	0.7732349	.41903601	5.451	0.7364501	.46559555	1745
1750	5.924	0.7726382	.41916234	5.443	0.7358556	.46573598	1750
1755	5.916	0.7720432	.41928868	5.436	0.7352628	.46587630	1755
1760	5.908	0.7714500	.41941502	5.428	0.7346717	.46601668	1760
1765	5.900	0.7708586	.41954136	5.421	0.7340825	.46615705	1765
1770	5.892	0.7702690	.41966769	5.414	0.7334951	.46629743	1770
1775	5.884	0.7696810	.41979403	5.406	0.7329098	.46643780	1775
1780	5.876	.07690948	.41992037	5.399	0.7323253	.46657818	1780
1785	5.868	.07685123	.42004671	5.392	0.7317430	.46671855	1785
1790	5.860	.07679275	.42017304	5.385	0.7311623	.46685893	1790
1795	5.853	.07673465	.42029938	5.378	0.7305834	.46699930	1795
1800	5.845	.07667670	.42042572	5.370	0.7300060	.46713968	1800
1805	5.837	.07661892	.42055206	5.363	0.7294304	.46728005	1805
1810	5.829	.07656130	.42067839	5.356	0.7288564	.46742043	1810
1815	5.822	.07650386	.42080473	5.349	0.7282842	.46756080	1815
1820	5.814	.07644657	.42093107	5.342	0.7277136	.46770118	1820
1825	5.806	.07638946	.42105741	5.335	0.7271446	.46784155	1825
1830	5.799	.07633251	.42118373	5.328	0.7265773	.46798193	1830
1835	5.791	.07627572	.42131007	5.321	0.7260115	.46812230	1835
1840	5.784	.07621909	.42143641	5.314	0.7254473	.46826268	1840
1845	5.776	.07616262	.42156275	5.307	0.7248848	.46840305	1845
1850	5.769	.07610630	.42168908	5.301	0.7243238	.46854343	1850
1855	5.761	0.7605015	.42181542	5.294	0.7237644	.46868380	1855
1860	5.754	0.7599416	.42194176	5.287	0.7232067	.46882418	1860
1865	5.746	0.7593832	.42206810	5.280	0.7226505	.46896455	1865
1870	5.739	0.7588264	.42219443	5.273	0.7220959	.46910493	1870
1875	5.732	0.7582712	.42232077	5.267	0.7215428	.46924530	1875
1880	5.724	0.7577175	.42244711	5.260	0.7209912	.46938568	1880
1885	5.717	0.7571652	.42257345	5.253	0.7204411	.46952605	1885
1890	5.710	0.7566146	.42269978	5.247	0.7198927	.46966643	1890
1895	5.703	0.7560655	.42282612	5.240	0.7193457	.46980680	1895
1900	5.695	0.7555179	.42295246	5.234	0.7188002	.46994718	1900
1905	5.688	0.7549717	.42307880	5.227	0.7182562	.47008755	1905
1910	5.681	0.7544270	.42320513	5.221	0.7177138	.47022793	1910
1915	5.674	0.7538838	.42333147	5.214	0.7171728	.47036830	1915
1920	5.667	0.7533422	.42345781	5.208	0.7166333	.47050868	1920
1925	5.660	0.7528019	.42358415	5.201	0.7160952	.47064905	1925
1930	5.653	0.7522632	.42371048	5.195	0.7155587	.47078943	1930
1935	5.646	0.7517260	.42383682	5.188	0.7150236	.47092980	1935
1940	5.639	0.7511902	.42396316	5.182	0.7144899	.47107018	1940
1945	5.632	0.7506558	.42408950	5.176	0.7139577	.47121055	1945
1950	5.625	0.7501228	.42421583	5.169	0.7134269	.47135093	1950

FOR SPECIAL INCLINATIONS AND VALUES OF (n).



Sine of Inclina- tion (1 over)	$n = .011$			$n = .012$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	5.118	0.7086581	.51091981	4.780	0.6794651	.55738706	1705
1710	5.106	0.7080461	.51107422	4.774	0.6788601	.55753551	1710
1715	5.098	0.7074410	.51122863	4.767	0.6782570	.55770396	1715
1720	5.091	0.7068877	.51138304	4.761	0.6776557	.55787241	1720
1725	5.084	0.7063363	.51153746	4.754	0.6770563	.55804086	1725
1730	5.077	0.7056867	.51169187	4.747	0.6764587	.55820931	1730
1735	5.070	0.7050889	.51184628	4.741	0.6758629	.55837776	1735
1740	5.063	0.7044429	.51200069	4.734	0.6752689	.55854621	1740
1745	5.056	0.7038486	.51215511	4.728	0.6746766	.55871466	1745
1750	5.050	0.7032561	.51230952	4.722	0.6740862	.55888311	1750
1755	5.043	0.7026654	.51246393	4.715	0.6734975	.55905156	1755
1760	5.036	0.7020765	.51261834	4.709	0.6729105	.55922001	1760
1765	5.029	0.7014894	.51277276	4.702	0.6723254	.55938846	1765
1770	5.022	0.7009040	.51292717	4.696	0.6717420	.55955691	1770
1775	5.016	0.7003203	.51308158	4.690	0.6711604	.55972536	1775
1780	5.009	0.6997384	.51323599	4.684	0.6705804	.55989381	1780
1785	5.002	0.6991582	.51339041	4.677	0.6700022	.56006226	1785
1790	4.996	0.6985797	.51354482	4.671	0.6694257	.56023071	1790
1795	4.989	0.6980027	.51369923	4.665	0.6688508	.56039916	1795
1800	4.982	0.6974274	.51385364	4.659	0.6682776	.56056761	1800
1805	4.976	0.6968538	.51400806	4.653	0.6677060	.56073606	1805
1810	4.969	0.6962820	.51416247	4.647	0.6671361	.56090451	1810
1815	4.963	0.6957119	.51431688	4.641	0.6665680	.56107296	1815
1820	4.956	0.6951433	.51447129	4.635	0.6660014	.56124141	1820
1825	4.950	0.6945764	.51462571	4.628	0.6654365	.56140986	1825
1830	4.943	0.6940111	.51478012	4.622	0.6648782	.56157831	1830
1835	4.937	0.6934475	.51493453	4.616	0.6643116	.56174676	1835
1840	4.930	0.6928853	.51508894	4.611	0.6637515	.56191521	1840
1846	4.924	0.6923249	.51524336	4.605	0.6631931	.56208366	1845
1850	4.918	0.6917660	.51539777	4.599	0.6626362	.56225211	1850
1855	4.911	0.6912087	.51555218	4.593	0.6620809	.56242056	1855
1860	4.905	0.6906530	.51570659	4.587	0.6615272	.56258901	1860
1865	4.899	0.6900990	.51586101	4.581	0.6609751	.56275746	1865
1870	4.893	0.6895464	.51601542	4.575	0.6604245	.56292591	1870
1875	4.886	0.6889954	.51616983	4.570	0.6598755	.56309436	1875
1880	4.880	0.6884460	.51632424	4.564	0.6593281	.56326281	1880
1885	4.874	0.6878980	.51647866	4.558	0.6587821	.56343126	1885
1890	4.868	0.6873515	.51663307	4.552	0.6582377	.56359971	1890
1895	4.862	0.6868067	.51678748	4.547	0.6576948	.56376861	1895
1900	4.856	0.6862633	.51694189	4.541	0.6571534	.56393816	1900
1905	4.850	0.6857214	.51709631	4.535	0.6566135	.56410506	1905
1910	4.844	0.6851809	.51725072	4.530	0.6560751	.56427351	1910
1915	4.838	0.6846421	.51740513	4.524	0.6555382	.56444196	1915
1920	4.832	0.6841047	.51755954	4.519	0.6550028	.56461041	1920
1925	4.826	0.6835687	.51771396	4.513	0.6544687	.56477886	1925
1930	4.820	0.6830341	.51786837	4.508	0.6539362	.56494731	1930
1935	4.814	0.6825011	.51802278	4.502	0.6534051	.56511576	1935
1940	4.808	0.6819696	.51817719	4.497	0.6528755	.56528421	1940
1945	4.802	0.6814395	.51833161	4.491	0.6523474	.56545266	1945
1950	4.796	0.6809107	.51848602	4.486	0.6518207	.56562111	1950

Sine of Inclina- tion (1 over)	n = .013			n = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	4.499	0.6581866	60881482	4.258	0.6292248	65026157	1705
1710	4.498	0.6525885	60899680	4.252	0.6286286	65045810	1710
1715	4.487	0.6519828	60417929	4.246	0.6280248	65065462	1715
1720	4.481	0.6518880	60486178	4.241	0.6274269	65085115	1720
1725	4.474	0.6507855	60454427	4.235	0.6268812	65104767	1725
1780	4.468	0.6501898	60472675	4.229	0.6262878	65124420	1780
1785	4.462	0.6495459	60490924	4.223	0.6256458	65144072	1785
1740	4.456	0.6489588	60509178	4.217	0.6250550	65163725	1740
1745	4.450	0.6488635	60527422	4.212	0.6244666	65183377	1745
1750	4.444	0.6477750	60545670	4.206	0.6238799	65203030	1750
1755	4.488	0.6471882	60563919	4.200	0.6232950	65222682	1755
1760	4.482	0.6466032	60582168	4.195	0.6227118	65242335	1760
1765	4.426	0.6460200	60600417	4.189	0.6221305	65261987	1765
1770	4.420	0.6454385	60618665	4.184	0.6215509	65281640	1770
1775	4.414	0.6448588	60636914	4.178	0.6209731	65301292	1775
1780	4.408	0.6442808	60655168	4.173	0.6203969	65320945	1780
1785	4.403	0.6437045	60673412	4.167	0.6198225	65340597	1785
1790	4.397	0.6431299	60691660	4.161	0.6192497	65360250	1790
1795	4.391	0.6425570	60709909	4.156	0.6186786	65379902	1795
1800	4.385	0.6419856	60728158	4.151	0.6181091	65399555	1800
1805	4.379	0.6414160	60746407	4.145	0.6175413	65419207	1805
1810	4.374	0.6408480	60764655	4.140	0.6169752	65438860	1810
1815	4.368	0.6402818	60782904	4.134	0.6164108	65458512	1815
1820	4.362	0.6397172	60801153	4.129	0.6158480	65478165	1820
1825	4.357	0.6391542	60819402	4.124	0.6152870	65497817	1825
1880	4.351	0.6385929	60837650	4.118	0.6147275	65517470	1880
1885	4.345	0.6380332	60855899	4.113	0.6141696	65537122	1885
1840	4.340	0.6374750	60874148	4.108	0.6136133	65556775	1840
1845	4.334	0.6369184	60892397	4.103	0.6130586	65576427	1845
1850	4.329	0.6363635	60910645	4.097	0.6125055	65596080	1850
1855	4.323	0.6358101	60928894	4.092	0.6119540	65615732	1855
1860	4.318	0.6352584	60947143	4.087	0.6114041	65635385	1860
1865	4.312	0.6347082	60965392	4.082	0.6108558	65655037	1865
1870	4.307	0.6341596	60983640	4.077	0.6103089	65674690	1870
1875	4.301	0.6336125	61001889	4.072	0.6097637	65694342	1875
1880	4.296	0.6330669	61020138	4.066	0.6092200	65713995	1880
1885	4.291	0.6325228	61038387	4.061	0.6086778	65733647	1885
1890	4.285	0.6319804	61056635	4.056	0.6081371	65753300	1890
1895	4.280	0.6314394	61074884	4.051	0.6075980	65772952	1895
1900	4.275	0.6308999	61093133	4.046	0.6070603	65792605	1900
1905	4.269	0.6303619	61111382	4.041	0.6065242	65812257	1905
1910	4.264	0.6298254	61129630	4.036	0.6059896	65831910	1910
1915	4.259	0.6292904	61147879	4.031	0.6054564	65851562	1915
1920	4.254	0.6287569	61166128	4.026	0.6049248	65871215	1920
1925	4.248	0.6282248	61184377	4.022	0.6043946	65890867	1925
1980	4.243	0.6276942	61202625	4.017	0.6038658	65910520	1980
1985	4.238	0.6271652	61220874	4.012	0.6033386	65930172	1985
1940	4.233	0.6266375	61239123	4.007	0.6028127	65949825	1940
1945	4.228	0.6261118	61257372	4.002	0.6022883	65969477	1945
1950	4.223	0.6255865	61275620	3.997	0.6017654	65989130	1950

Sine of Inclina- tion (1 over)	$n = .015$			$n = .017$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	4.049	0.6078799	.69670888	3.705	0.5688178	.78960884	1705
1710	4.044	0.6067804	.69691989	3.700	0.5682212	.78984197	1710
1715	4.038	0.6061829	.69712995	3.695	0.5676271	.79008061	1715
1720	4.033	0.6055872	.69734051	3.690	0.5670348	.79031925	1720
1725	4.027	0.6049984	.69755108	3.685	0.5664458	.79055789	1725
1730	4.022	0.6044018	.69776164	3.680	0.5658556	.79079652	1730
1735	4.016	0.6038111	.69797220	3.675	0.5652688	.79103516	1735
1740	4.011	0.6032226	.69818276	3.670	0.5646837	.79127380	1740
1745	4.005	0.6026360	.69839383	3.665	0.5641004	.79151244	1745
1750	4.000	0.6020511	.69860389	3.660	0.5635189	.79175107	1750
1755	3.995	0.6014680	.69881445	3.655	0.5629392	.79198971	1755
1760	3.989	0.6008866	.69902501	3.651	0.5623612	.79222835	1760
1765	3.984	0.6003070	.69923558	3.646	0.5617850	.79246699	1765
1770	3.979	0.5997292	.69944614	3.641	0.5612106	.79270562	1770
1775	3.973	0.5991532	.69965670	3.636	0.5606379	.79294426	1775
1780	3.968	0.5985788	.69986726	3.631	0.5600669	.79318290	1780
1785	3.963	0.5980061	.70007783	3.627	0.5594976	.79342154	1785
1790	3.958	0.5974351	.70028839	3.622	0.5589299	.79366017	1790
1795	3.952	0.5968658	.70049895	3.617	0.5583640	.79389881	1795
1800	3.947	0.5962981	.70070951	3.612	0.5577997	.79413745	1800
1805	3.942	0.5957321	.70092008	3.608	0.5572371	.79437609	1805
1810	3.937	0.5951678	.70113064	3.603	0.5566762	.79461472	1810
1815	3.932	0.5946052	.70134120	3.598	0.5561169	.79485336	1815
1820	3.927	0.5940442	.70155176	3.594	0.5555592	.79509200	1820
1825	3.922	0.5934849	.70176233	3.589	0.5550033	.79533064	1825
1830	3.917	0.5929271	.70197289	3.585	0.5544490	.79556927	1830
1835	3.912	0.5923710	.70218345	3.580	0.5538962	.79580791	1835
1840	3.907	0.5918165	.70239401	3.576	0.5533451	.79604655	1840
1845	3.902	0.5912636	.70260458	3.571	0.5527955	.79628519	1845
1850	3.897	0.5907122	.70281514	3.567	0.5522476	.79652382	1850
1855	3.892	0.5901625	.70302570	3.562	0.5517018	.79676246	1855
1860	3.887	0.5896144	.70323626	3.558	0.5511565	.79700110	1860
1865	3.882	0.5890678	.70344683	3.553	0.5506138	.79723974	1865
1870	3.877	0.5885228	.70365739	3.549	0.5500717	.79747837	1870
1875	3.872	0.5879794	.70386795	3.544	0.5495316	.79771701	1875
1880	3.868	0.5874374	.70407851	3.540	0.5489930	.79795565	1880
1885	3.863	0.5868970	.70428908	3.536	0.5484559	.79819429	1885
1890	3.858	0.5863581	.70449964	3.531	0.5479204	.79843292	1890
1895	3.853	0.5858208	.70471020	3.527	0.5473864	.79867156	1895
1900	3.848	0.5852849	.70492076	3.523	0.5468539	.79891020	1900
1905	3.844	0.5847506	.70513133	3.518	0.5463229	.79914884	1905
1910	3.839	0.5842177	.70534189	3.514	0.5457934	.79938747	1910
1915	3.834	0.5836864	.70555245	3.510	0.5452654	.79962611	1915
1920	3.830	0.5831565	.70576301	3.505	0.5447389	.79986475	1920
1925	3.825	0.5826280	.70597358	3.501	0.5442138	.80010339	1925
1930	3.820	0.5821011	.70618414	3.497	0.5436902	.80034202	1930
1935	3.816	0.5815756	.70639470	3.493	0.5431681	.80058066	1935
1940	3.811	0.5810515	.70660526	3.489	0.5426473	.80081930	1940
1945	3.807	0.5805289	.70681583	3.484	0.5421281	.80105794	1945
1950	3.802	0.5800077	.70702639	3.480	0.5416103	.80129657	1950

Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	8-818	0-5209011	92894510	8-074	0-4877724	1-0450688	1705
1710	8-814	0-5208097	92922585	8-070	0-4871846	1-0453791	1710
1715	8-809	0-5197202	92950660	8-066	0-4865986	1-0456950	1715
1720	8-805	0-5191826	92978735	8-062	0-4860145	1-0460108	1720
1725	8-800	0-5185468	98006810	8-058	0-4854322	1-0463266	1725
1730	8-296	0-5179628	98084885	8-054	0-4848517	1-0466425	1730
1735	8-291	0-5178905	98062960	8-050	0-4842730	1-0469583	1735
1740	8-287	0-5168001	98091035	8-046	0-4836961	1-0472742	1740
1745	8-283	0-5162214	98119110	8-042	0-4831210	1-0475900	1745
1750	8-278	0-5156446	98147185	8-038	0-4825477	1-0479059	1750
1755	8-274	0-5150695	98175260	8-034	0-4819760	1-0482217	1755
1760	8-270	0-5144961	98208835	8-030	0-4814062	1-0485375	1760
1765	8-265	0-5139245	98231410	8-026	0-4808382	1-0488534	1765
1770	8-261	0-5133547	98259485	8-022	0-4802719	1-0491692	1770
1775	8-257	0-5127867	98287560	8-018	0-4797078	1-0494851	1775
1780	8-253	0-5122204	98315635	8-014	0-4791445	1-0498009	1780
1785	8-248	0-5116557	98343710	8-010	0-4785833	1-0501168	1785
1790	8-244	0-5110927	98371785	8-006	0-4780239	1-0504326	1790
1795	8-240	0-5105314	98399860	8-002	0-4774661	1-0507485	1795
1800	8-236	0-5099717	98427935	2-999	0-4769099	1-0510643	1800
1805	8-232	0-5094137	98456010	2-995	0-4763554	1-0513801	1805
1810	8-227	0-5088574	98484085	2-991	0-4758026	1-0516960	1810
1815	8-223	0-5083028	98512160	2-987	0-4752516	1-0520118	1815
1820	8-219	0-5077498	98540235	2-983	0-4747021	1-0523277	1820
1825	8-215	0-5071985	98568310	2-980	0-4741543	1-0526435	1825
1830	8-211	0-5066488	98596385	2-976	0-4736080	1-0529593	1830
1835	8-207	0-5061007	98624460	2-972	0-4730634	1-0532752	1835
1840	8-203	0-5055541	98652535	2-968	0-4725204	1-0535910	1840
1845	8-199	0-5050092	98680610	2-965	0-4719790	1-0539069	1845
1850	8-195	0-5044658	98708685	2-961	0-4714391	1-0542227	1850
1855	8-191	0-5039241	98736760	2-957	0-4709010	1-0545386	1855
1860	8-187	0-5033840	98764835	2-954	0-4703643	1-0548544	1860
1865	8-183	0-5028454	98792910	2-950	0-4698292	1-0551702	1865
1870	8-179	0-5023084	98820985	2-946	0-4692957	1-0554861	1870
1875	8-175	0-5017729	98849060	2-943	0-4687638	1-0558019	1875
1880	8-171	0-5012390	98877135	2-939	0-4682333	1-0561178	1880
1885	8-167	0-5007065	98905210	2-936	0-4677043	1-0564336	1885
1890	8-164	0-5001756	98933285	2-932	0-4671770	1-0567495	1890
1895	8-160	0-4996462	98961360	2-929	0-4666511	1-0570653	1895
1900	8-156	0-4991183	98989435	2-925	0-4661267	1-0573811	1900
1905	8-152	0-4985920	94017510	2-921	0-4656038	1-0576970	1905
1910	8-148	0-4980671	94045585	2-918	0-4650824	1-0580128	1910
1915	8-144	0-4975487	94073660	2-914	0-4645625	1-0583287	1915
1920	8-141	0-4970218	94101735	2-911	0-4640441	1-0586445	1920
1925	8-137	0-4965013	94129810	2-908	0-4635271	1-0589604	1925
1930	8-133	0-4959823	94157885	2-904	0-4630116	1-0592762	1930
1935	8-129	0-4954648	94185960	2-901	0-4624976	1-0595921	1935
1940	8-126	0-4949487	94214035	2-897	0-4619849	1-0599079	1940
1945	8-122	0-4944340	94242110	2-893	0-4614738	1-0602237	1945
1950	8-118	0-4939208	94270185	2-890	0-4609641	1-0605396	1950

Sine of Inclination (1 over)	$n = \cdot 0250$			$n = \cdot 0275$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
1705	2·880	0·4598206	1·1611814	2·720	0·4845702	1·2772995	1705
1710	2·876	0·4587859	1·1615823	2·716	0·4839886	1·2776855	1710
1715	2·872	0·4581532	1·1618833	2·718	0·4834089	1·2780716	1715
1720	2·868	0·4575723	1·1622842	2·709	0·4828810	1·2784576	1720
1725	2·864	0·4569938	1·1625851	2·706	0·4822550	1·2788436	1725
1730	2·860	0·4564160	1·1629861	2·702	0·4816807	1·2792297	1730
1735	2·857	0·4558406	1·1632870	2·698	0·4811082	1·2796157	1735
1740	2·853	0·4552669	1·1636879	2·695	0·4805376	1·2800017	1740
1745	2·849	0·4546950	1·1639889	2·691	0·4299687	1·2803878	1745
1750	2·845	0·4541249	1·1643898	2·688	0·4294016	1·2807738	1750
1755	2·842	0·4535566	1·1646908	2·684	0·4288362	1·2811598	1755
1760	2·838	0·4529900	1·1650417	2·681	0·4282727	1·2815459	1760
1765	2·834	0·4524252	1·1653926	2·677	0·4277108	1·2819319	1765
1770	2·830	0·4518622	1·1657436	2·674	0·4271508	1·2823179	1770
1775	2·827	0·4513009	1·1660945	2·670	0·4265925	1·2827040	1775
1780	2·823	0·4507413	1·1664454	2·667	0·4260359	1·2830900	1780
1785	2·820	0·4501834	1·1667964	2·664	0·4254810	1·2834760	1785
1790	2·816	0·4496272	1·1671473	2·660	0·4249278	1·2838620	1790
1795	2·812	0·4490726	1·1674983	2·657	0·4243762	1·2842481	1795
1800	2·809	0·4485196	1·1678492	2·654	0·4238262	1·2846341	1800
1805	2·805	0·4479684	1·1682001	2·650	0·4232780	1·2850201	1805
1810	2·802	0·4474188	1·1685511	2·647	0·4227314	1·2854062	1810
1815	2·798	0·4468709	1·1689020	2·644	0·4221866	1·2857922	1815
1820	2·795	0·4463247	1·1692529	2·640	0·4216433	1·2861782	1820
1825	2·791	0·4457801	1·1696039	2·637	0·4211018	1·2865643	1825
1830	2·788	0·4452372	1·1699548	2·634	0·4205618	1·2869503	1830
1835	2·784	0·4446958	1·1703058	2·630	0·4200234	1·2873363	1835
1840	2·781	0·4441560	1·1706567	2·627	0·4194865	1·2877224	1840
1845	2·777	0·4436178	1·1710076	2·624	0·4189513	1·2881084	1845
1850	2·774	0·4430812	1·1713586	2·621	0·4184177	1·2884944	1850
1855	2·770	0·4425462	1·1717095	2·617	0·4178857	1·2888805	1855
1860	2·767	0·4420128	1·1720604	2·614	0·4173553	1·2892665	1860
1865	2·764	0·4414810	1·1724114	2·611	0·4168265	1·2896526	1865
1870	2·760	0·4409507	1·1727623	2·608	0·4162991	1·2900385	1870
1875	2·757	0·4404220	1·1731133	2·605	0·4157733	1·2904246	1875
1880	2·754	0·4398947	1·1734642	2·602	0·4152491	1·2908106	1880
1885	2·750	0·4393690	1·1738151	2·599	0·4147263	1·2911966	1885
1890	2·747	0·4388448	1·1741661	2·595	0·4142052	1·2915827	1890
1895	2·744	0·4383222	1·1745170	2·592	0·4136855	1·2919687	1895
1900	2·740	0·4378010	1·1748679	2·589	0·4131674	1·2923547	1900
1905	2·737	0·4372813	1·1752189	2·586	0·4126507	1·2927408	1905
1910	2·734	0·4367632	1·1755698	2·583	0·4121355	1·2931268	1910
1915	2·731	0·4362465	1·1759208	2·580	0·4116218	1·2935128	1915
1920	2·727	0·4357313	1·1762717	2·577	0·4111096	1·2938989	1920
1925	2·724	0·4352175	1·1766226	2·574	0·4105988	1·2942849	1925
1930	2·721	0·4347052	1·1769736	2·571	0·4100894	1·2946709	1930
1935	2·718	0·4341944	1·1773245	2·568	0·4095816	1·2950570	1935
1940	2·714	0·4336850	1·1776754	2·565	0·4090752	1·2954430	1940
1945	2·711	0·4331771	1·1780264	2·562	0·4085702	1·2958290	1945
1950	2·708	0·4326706	1·1783773	2·559	0·4080667	1·2962150	1950

Sine of Inclina- tion (1 over)	n = .030			n = .035			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1705	2·587	0·4128096	1·3984177	2·378	0·3762466	1·6256589	1705
1710	2·584	0·4122308	1·3988888	2·375	0·3756728	1·6261452	1710
1715	2·580	0·4116589	1·3942599	2·372	0·3751008	1·6266866	1715
1720	2·577	0·4110788	1·3946810	2·369	0·3745808	1·6271279	1720
1725	2·573	0·4105056	1·3951022	2·366	0·3739626	1·6276192	1725
1780	2·570	0·4099842	1·3955233	2·363	0·3733961	1·6281105	1780
1785	2·567	0·4098645	1·3959444	2·360	0·3728814	1·6286018	1785
1740	2·563	0·4087966	1·3963655	2·357	0·3722685	1·6290931	1740
1745	2·560	0·4082305	1·3967867	2·354	0·3717074	1·6295844	1745
1750	2·557	0·4076662	1·3972078	2·350	0·3711481	1·6300757	1750
1755	2·553	0·4071038	1·3976289	2·347	0·3705905	1·6305671	1755
1760	2·550	0·4065428	1·3980500	2·344	0·3700847	1·6310584	1760
1765	2·547	0·4059838	1·3984712	2·341	0·3694807	1·6315497	1765
1770	2·543	0·4054265	1·3988923	2·338	0·3689284	1·6320410	1770
1775	2·540	0·4048710	1·3993134	2·335	0·3683779	1·6325323	1775
1780	2·537	0·4043171	1·3997345	2·333	0·3678291	1·6330236	1780
1785	2·534	0·4037650	1·4001557	2·330	0·3672819	1·6335149	1785
1790	2·531	0·4032146	1·4005768	2·327	0·3667365	1·6340062	1790
1795	2·527	0·4026658	1·4009979	2·324	0·3661927	1·6344976	1795
1800	2·524	0·4021186	1·4014190	2·321	0·3656505	1·6349889	1800
1805	2·521	0·4015781	1·4018402	2·318	0·3651100	1·6354802	1805
1810	2·518	0·4010294	1·4022613	2·315	0·3645712	1·6359715	1810
1815	2·515	0·4004878	1·4026824	2·312	0·3640341	1·6364628	1815
1820	2·512	0·3999468	1·4031035	2·309	0·3634986	1·6369541	1820
1825	2·508	0·3994080	1·4035247	2·307	0·3629648	1·6374454	1825
1830	2·505	0·3988707	1·4039458	2·304	0·3624325	1·6379367	1830
1835	2·502	0·3983351	1·4043669	2·301	0·3619019	1·6384281	1835
1840	2·499	0·3978011	1·4047880	2·298	0·3613729	1·6389194	1840
1845	2·496	0·3972687	1·4052092	2·295	0·3608454	1·6394107	1845
1850	2·493	0·3967378	1·4056303	2·293	0·3603195	1·6399020	1850
1855	2·490	0·3962086	1·4060514	2·290	0·3597952	1·6403933	1855
1860	2·487	0·3956809	1·4064725	2·287	0·3592725	1·6408846	1860
1865	2·484	0·3951549	1·4068937	2·284	0·3587514	1·6413759	1865
1870	2·481	0·3946308	1·4073148	2·282	0·3582318	1·6418672	1870
1875	2·478	0·3941073	1·4077359	2·279	0·3577138	1·6423586	1875
1880	2·475	0·3935859	1·4081570	2·276	0·3571973	1·6428499	1880
1885	2·472	0·3930659	1·4085782	2·273	0·3566823	1·6433412	1885
1890	2·469	0·3925474	1·4089993	2·271	0·3561688	1·6438325	1890
1895	2·466	0·3920305	1·4094204	2·268	0·3556569	1·6443238	1895
1900	2·463	0·3915151	1·4098415	2·265	0·3551464	1·6448151	1900
1905	2·460	0·3910012	1·4102627	2·263	0·3546375	1·6453064	1905
1910	2·457	0·3904887	1·4106838	2·260	0·3541300	1·6457977	1910
1915	2·455	0·3899778	1·4111049	2·257	0·3536240	1·6462891	1915
1920	2·452	0·3894688	1·4115260	2·255	0·3531195	1·6467804	1920
1925	2·449	0·3889608	1·4119472	2·252	0·3526164	1·6472717	1925
1930	2·446	0·3884537	1·4123683	2·250	0·3521148	1·6477630	1930
1935	2·443	0·3879486	1·4127894	2·247	0·3516147	1·6482543	1935
1940	2·440	0·3874450	1·4132105	2·244	0·3511160	1·6487456	1940
1945	2·437	0·3869428	1·4136317	2·242	0·3506187	1·6492369	1945
1950	2·435	0·3864420	1·4140528	2·239	0·3501229	1·6497282	1950

Sine of Inclina- tion (1 over)	$n = \cdot 050$			Sine of Inclina- tion (1 over)	$n = \cdot 009$		
	N	log. N	D		N	log. N	D
1705	2·002	0·8015055	2·3223628	1955	5·618	0·7495913	·42484217
1710	2·000	0·8009438	2·3230646	1960	5·611	0·7490611	·42446851
1715	1·997	0·8008830	2·3237665	1965	5·604	0·7485323	·42459485
1720	1·994	0·2998246	2·3244684	1970	5·598	0·7479949	·42472118
1725	1·992	0·2992680	2·3251703	1975	5·591	0·7474791	·42484752
1730	1·989	0·2987132	2·3258721	1980	5·584	0·7469547	·42497386
1735	1·987	0·2981602	2·3265740	1985	5·577	0·7464316	·42510020
1740	1·984	0·2976089	2·3272759	1990	5·571	0·7459098	·42522653
1745	1·982	0·2970595	2·3279778	1995	5·564	0·7453895	·42535287
1750	1·979	0·2965118	2·3286796	2000	5·557	0·7448705	·42547921
1755	1·977	0·2959659	2·3293815	2005	5·551	0·7443528	·42560555
1760	1·974	0·2954217	2·3300834	2010	5·544	0·7438365	·42573188
1765	1·972	0·2948793	2·3307853	2015	5·538	0·7433215	·42585822
1770	1·969	0·2943387	2·3314871	2020	5·531	0·7428079	·42598456
1775	1·967	0·2937997	2·3321890	2025	5·525	0·7422956	·42611090
1780	1·965	0·2932625	2·3328909	2030	5·518	0·7417846	·42623723
1785	1·962	0·2927269	2·3335928	2035	5·512	0·7412749	·42636357
1790	1·960	0·2921930	2·3342946	2040	5·505	0·7407665	·42648991
1795	1·957	0·2916609	2·3349965	2045	5·499	0·7402594	·42661625
1800	1·955	0·2911303	2·3356984	2050	5·492	0·7397537	·42674258
1805	1·953	0·2906014	2·3364003	2055	5·486	0·7392493	·42686892
1810	1·950	0·2900742	2·3371021	2060	5·480	0·7387461	·42699526
1815	1·948	0·2895486	2·3378040	2065	5·473	0·7382442	·42712160
1820	1·945	0·2890247	2·3385059	2070	5·467	0·7377435	·42724793
1825	1·943	0·2885024	2·3392078	2075	5·461	0·7372441	·42737427
1830	1·941	0·2879818	2·3399096	2080	5·454	0·7367460	·42750061
1835	1·938	0·2874627	2·3406115	2085	5·448	0·7362492	·42762695
1840	1·936	0·2869452	2·3413134	2090	5·442	0·7357536	·42775328
1845	1·934	0·2864293	2·3420153	2095	5·436	0·7352592	·42787962
1850	1·932	0·2859150	2·3427171	2100	5·430	0·7347660	·42800596
1855	1·929	0·2854023	2·3434190	2105	5·423	0·7342741	·42813230
1860	1·927	0·2848912	2·3441209	2110	5·417	0·7337835	·42825863
1865	1·925	0·2843816	2·3448228	2115	5·411	0·7332941	·42838497
1870	1·923	0·2838735	2·3455246	2120	5·405	0·7328059	·42851131
1875	1·920	0·2833671	2·3462265	2115	5·399	0·7323189	·42863765
1880	1·918	0·2828621	2·3469284	2130	5·393	0·7318330	·42876399
1885	1·916	0·2823585	2·3476303	2135	5·387	0·7313483	·42889032
1890	1·914	0·2818566	2·3483321	2140	5·381	0·7308648	·42901666
1895	1·911	0·2813562	2·3490340	2145	5·375	0·7303826	·42914300
1900	1·909	0·2808572	2·3497359	2150	5·369	0·7299016	·42926933
1905	1·907	0·2803598	2·3504378	2155	5·363	0·7294217	·42939567
1910	1·905	0·2798638	2·3511396	2160	5·357	0·7289429	·42952201
1915	1·903	0·2793694	2·3518415	2165	5·351	0·7284653	·42964835
1920	1·901	0·2788764	2·3525434	2170	5·346	0·7279889	·42977468
1925	1·898	0·2783848	2·3532453	2175	5·340	0·7275136	·42990102
1930	1·896	0·2778947	2·3539471	2180	5·334	0·7270395	·43002736
1935	1·894	0·2774060	2·3546490	2185	5·328	0·7265664	·43015370
1940	1·892	0·2769188	2·3553509	2190	5·322	0·7260945	·43028003
1945	1·890	0·2764331	2·3560528	2195	5·316	0·7256238	·43040637
1950	1·888	0·2759487	2·3567546	2200	5·311	0·7251543	·43053271

Sine of Inclina- tion (1 over)	n = .010			n = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1955	5.168	0.7128975	47149180	4.791	0.6808885	51864048	1955
1960	5.157	0.7128695	47168188	4.785	0.6798576	51879484	1960
1965	5.150	0.7118429	47177205	4.779	0.6798880	51894926	1965
1970	5.144	0.7118178	47191248	4.778	0.6788099	51910367	1970
1975	5.138	0.7107940	47205280	4.767	0.6782888	51925808	1975
1980	5.132	0.7102717	47219818	4.762	0.6777681	51941249	1980
1985	5.126	0.7097508	47238355	4.756	0.6772492	51956691	1985
1990	5.120	0.7092312	47247398	4.750	0.6767816	51972182	1990
1995	5.113	0.7087130	47261480	4.745	0.6762155	51987573	1995
2000	5.107	0.7081962	47275468	4.739	0.6757008	52003014	2000
2005	5.101	0.7076807	47289505	4.734	0.6751878	52018456	2005
2010	5.095	0.7071666	47303543	4.728	0.6746753	52033897	2010
2015	5.089	0.7066538	47317580	4.721	0.6740648	52049338	2015
2020	5.083	0.7061423	47331618	4.717	0.6738552	52064779	2020
2025	5.077	0.7056321	47345655	4.711	0.6731471	52080221	2025
2030	5.071	0.7051233	47359698	4.706	0.6726408	52095662	2030
2035	5.065	0.7046158	47373730	4.700	0.6721349	52111103	2035
2040	5.060	0.7041096	47387768	4.695	0.6716308	52126544	2040
2045	5.054	0.7036046	47401805	4.690	0.6711279	52141986	2045
2050	5.048	0.7031010	47415843	4.684	0.6706263	52157427	2050
2055	5.042	0.7025988	47429880	4.679	0.6701262	52172868	2055
2060	5.036	0.7020977	47443918	4.673	0.6696273	52188309	2060
2065	5.030	0.7015980	47457955	4.668	0.6691296	52203751	2065
2070	5.025	0.7010995	47471993	4.663	0.6686331	52219192	2070
2075	5.019	0.7006023	47486030	4.657	0.6681379	52234633	2075
2080	5.013	0.7001063	47500068	4.652	0.6676440	52250074	2080
2085	5.007	0.6996117	47514105	4.647	0.6671514	52265516	2085
2090	5.002	0.6991183	47528143	4.642	0.6666600	52280957	2090
2095	4.996	0.6986260	47542180	4.636	0.6661699	52296398	2095
2100	4.990	0.6981350	47556218	4.631	0.6656809	52311839	2100
2105	4.985	0.6976453	47570255	4.626	0.6651982	52327281	2105
2110	4.979	0.6971568	47584293	4.621	0.6647069	52342722	2110
2115	4.974	0.6966695	47598330	4.616	0.6642217	52358163	2115
2120	4.968	0.6961835	47612368	4.610	0.6637377	52373604	2120
2125	4.962	0.6956986	47626405	4.605	0.6632549	52389046	2125
2130	4.957	0.6952149	47640443	4.600	0.6627733	52404487	2130
2135	4.951	0.6947323	47654480	4.595	0.6622928	52419928	2135
2140	4.946	0.6942510	47668518	4.590	0.6618136	52435369	2140
2145	4.941	0.6937709	47682555	4.585	0.6613356	52450811	2145
2150	4.935	0.6932921	47696593	4.580	0.6608587	52466252	2150
2155	4.930	0.6928143	47710630	4.575	0.6603880	52481693	2155
2160	4.924	0.6923377	47724668	4.570	0.6599085	52497134	2160
2165	4.919	0.6918622	47738705	4.565	0.6594351	52512576	2165
2170	4.913	0.6913879	47752743	4.560	0.6589628	52528017	2170
2175	4.908	0.6909148	47766780	4.555	0.6584917	52543458	2175
2180	4.903	0.6904428	47780818	4.550	0.6580218	52558899	2180
2185	4.897	0.6899719	47794855	4.545	0.6575530	52574341	2185
2190	4.892	0.6895022	47808893	4.540	0.6570853	52589782	2190
2195	4.887	0.6890336	47822930	4.535	0.6566188	52605223	2195
2200	4.882	0.6885662	47836968	4.531	0.6561535	52620664	2200

Sine of Inclina- tion (1 over)	$n = \cdot 012$			$n = \cdot 013$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1955	4.480	0.6512954	.56578956	4.218	0.6250680	.61298869	1955
1960	4.475	0.6507715	.56595801	4.218	0.6245410	.61812118	1960
1965	4.469	0.6502490	.56612646	4.207	0.6240204	.61830867	1965
1970	4.464	0.6497278	.56629491	4.202	0.6235013	.61848615	1970
1975	4.459	0.6492082	.56646386	4.197	0.6229835	.61866864	1975
1980	4.453	0.6486900	.56663181	4.192	0.6224672	.61885113	1980
1985	4.448	0.6481731	.56680026	4.187	0.6219528	.61408862	1985
1990	4.443	0.6476576	.56696871	4.183	0.6214386	.61421610	1990
1995	4.438	0.6471435	.56713716	4.178	0.6209264	.61439859	1995
2000	4.432	0.6466307	.56730561	4.173	0.6204156	.61458108	2000
2005	4.427	0.6461192	.56747406	4.168	0.6199060	.61476357	2005
2010	4.422	0.6456092	.56764251	4.163	0.6193979	.61494605	2010
2015	4.417	0.6451005	.56781096	4.158	0.6188911	.61512854	2015
2020	4.412	0.6445981	.56797941	4.153	0.6183856	.61531103	2020
2025	4.406	0.6440870	.56814786	4.148	0.6178814	.61549852	2025
2030	4.401	0.6435822	.56831631	4.144	0.6173785	.61567600	2030
2035	4.396	0.6430787	.56848476	4.139	0.6168770	.61585849	2035
2040	4.391	0.6425766	.56865321	4.134	0.6163768	.61604098	2040
2045	4.386	0.6420758	.56882166	4.129	0.6158778	.61622347	2045
2050	4.381	0.6415762	.56899011	4.125	0.6153802	.61640595	2050
2055	4.376	0.6410780	.56915856	4.120	0.6148839	.61658844	2055
2060	4.371	0.6405810	.56932701	4.115	0.6143888	.61677093	2060
2065	4.366	0.6400854	.56949546	4.111	0.6138950	.61695342	2065
2070	4.361	0.6395909	.56966391	4.106	0.6134025	.61713590	2070
2075	4.356	0.6390977	.56983236	4.101	0.6129112	.61731839	2075
2080	4.351	0.6386059	.57000081	4.097	0.6124213	.61750088	2080
2085	4.346	0.6381153	.57016926	4.092	0.6119326	.61768337	2085
2090	4.341	0.6376259	.57033771	4.087	0.6114452	.61786585	2090
2095	4.336	0.6371377	.57050616	4.083	0.6109589	.61804834	2095
2100	4.332	0.6366507	.57067461	4.078	0.6104738	.61823083	2100
2105	4.327	0.6361650	.57084306	4.074	0.6099900	.61841332	2105
2110	4.322	0.6356806	.57101151	4.069	0.6095075	.61859580	2110
2115	4.317	0.6351974	.57117996	4.065	0.6090262	.61877829	2115
2120	4.312	0.6347154	.57134841	4.060	0.6085462	.61896078	2120
2125	4.308	0.6342346	.57151686	4.056	0.6080672	.61914327	2125
2130	4.303	0.6337549	.57168531	4.051	0.6075895	.61932575	2130
2135	4.298	0.6332764	.57185376	4.047	0.6071129	.61950824	2135
2140	4.293	0.6327991	.57202221	4.042	0.6066375	.61969073	2140
2145	4.289	0.6323231	.57219066	4.038	0.6061634	.61987322	2145
2150	4.284	0.6318483	.57235911	4.034	0.6056905	.62005570	2150
2155	4.279	0.6313746	.57252756	4.029	0.6052187	.62023819	2155
2160	4.275	0.6309019	.57269601	4.025	0.6047480	.62042068	2160
2165	4.270	0.6304306	.57286446	4.020	0.6042785	.62060317	2165
2170	4.265	0.6299603	.57303291	4.016	0.6038101	.62078565	2170
2175	4.261	0.6294912	.57320136	4.012	0.6033429	.62096814	2175
2180	4.256	0.6290233	.57336981	4.008	0.6028769	.62115063	2180
2185	4.252	0.6285565	.57353826	4.003	0.6024120	.62133312	2185
2190	4.247	0.6280908	.57370671	3.999	0.6019482	.62151560	2190
2195	4.243	0.6276263	.57387516	3.995	0.6014855	.62169809	2195
2200	4.238	0.6271630	.57404361	3.990	0.6010241	.62188058	2200

Sine of Inclina- tion (1 over)	n = .014			n = .015			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1955	8·992	0·6012438	·66008782	8·797	0·5794879	·70728695	1955
1960	8·988	0·6007287	·66028435	8·798	0·5789698	·70744751	1960
1965	8·983	0·6002049	·66048087	8·788	0·5784526	·70765808	1965
1970	8·978	0·5996876	·66067740	8·784	0·5779871	·70786864	1970
1975	8·973	0·5991716	·66087392	8·779	0·5774229	·70807920	1975
1980	8·969	0·5986571	·66107045	8·775	0·5769101	·70828976	1980
1985	8·964	0·5981441	·66126697	8·770	0·5763998	·70850033	1985
1990	8·959	0·5976323	·66146350	8·766	0·5758888	·70871089	1990
1995	8·955	0·5971219	·66166002	8·762	0·5753802	·70892145	1995
2000	8·950	0·5966129	·66185655	8·757	0·5748780	·70913201	2000
2005	8·946	0·5961052	·66205307	8·753	0·5743671	·70934258	2005
2010	8·941	0·5955989	·66224960	8·749	0·5738626	·70955314	2010
2015	8·936	0·5950939	·66244612	8·744	0·5733594	·70976370	2015
2020	8·932	0·5945902	·66264265	8·740	0·5728574	·70997426	2020
2025	8·927	0·5940879	·66283917	8·736	0·5723569	·71018488	2025
2030	8·923	0·5935869	·66303570	8·731	0·5718576	·71039539	2030
2035	8·918	0·5930872	·66323222	8·727	0·5713596	·71060595	2035
2040	8·914	0·5925888	·66342875	8·723	0·5708630	·71081651	2040
2045	8·909	0·5920917	·66362527	8·718	0·5703677	·71102708	2045
2050	8·905	0·5915958	·66382180	8·714	0·5698736	·71123764	2050
2055	8·900	0·5911014	·66401832	8·710	0·5693810	·71144820	2055
2060	8·896	0·5906082	·66421485	8·706	0·5688895	·71165876	2060
2065	8·891	0·5901163	·66441137	8·702	0·5683994	·71186933	2065
2070	8·887	0·5896256	·66460790	8·698	0·5679104	·71207989	2070
2075	8·883	0·5891362	·66480442	8·693	0·5674227	·71229045	2075
2080	8·878	0·5886480	·66500095	8·689	0·5669364	·71250101	2080
2085	8·874	0·5881612	·66519747	8·685	0·5664513	·71271158	2085
2090	8·870	0·5876755	·66539400	8·681	0·5659674	·71292214	2090
2095	8·865	0·5871911	·66559052	8·677	0·5654848	·71313270	2095
2100	8·861	0·5867079	·66578705	8·673	0·5650038	·71334326	2100
2105	8·857	0·5862259	·66598357	8·669	0·5645281	·71355383	2105
2110	8·853	0·5857453	·66618010	8·665	0·5640442	·71376439	2110
2115	8·848	0·5852658	·66637662	8·661	0·5635666	·71397495	2115
2120	8·844	0·5847876	·66657315	8·657	0·5630901	·71418551	2120
2125	8·840	0·5843104	·66676967	8·653	0·5626147	·71439608	2125
2130	8·836	0·5838345	·66696620	8·649	0·5621406	·71460664	2130
2135	8·831	0·5833598	·66716272	8·645	0·5616676	·71481720	2135
2140	8·827	0·5828862	·66735925	8·641	0·5611958	·71502776	2140
2145	8·823	0·5824139	·66755577	8·637	0·5607253	·71523833	2145
2150	8·819	0·5819429	·66775230	8·633	0·5602560	·71544889	2150
2155	8·815	0·5814729	·66794882	8·629	0·5597878	·71565945	2155
2160	8·811	0·5810040	·66814535	8·625	0·5593207	·71587001	2160
2165	8·807	0·5805364	·66834187	8·621	0·5588547	·71608058	2165
2170	8·803	0·5800699	·66853840	8·617	0·5583900	·71629114	2170
2175	8·798	0·5796045	·66873492	8·613	0·5579264	·71650170	2175
2180	8·794	0·5791403	·66893145	8·610	0·5574640	·71671226	2180
2185	8·790	0·5786772	·66912797	8·606	0·5570027	·71692283	2185
2190	8·786	0·5782152	·66932450	8·602	0·5565424	·71713339	2190
2195	8·782	0·5777544	·66952102	8·598	0·5560884	·71734395	2195
2200	8·778	0·5772948	·66971755	8·594	0·5556256	·71755451	2200

Sine of Inclination (1 over)	<i>n</i> = .017			<i>n</i> = .020			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
1955	3·476	0·5410989	·80158521	3·115	0·4984090	·94298260	1955
1960	3·472	0·5405788	·80177385	3·111	0·4928985	·94326335	1960
1965	3·468	0·5400652	·80201249	3·107	0·4923895	·94354410	1965
1970	3·464	0·5395530	·80225112	3·104	0·4918820	·94382485	1970
1975	3·460	0·5390422	·80248976	3·100	0·4913757	·94410560	1975
1980	3·456	0·5385329	·80272840	3·096	0·4908710	·94438635	1980
1985	3·452	0·5380249	·80296704	3·093	0·4903676	·94466710	1985
1990	3·448	0·5375182	·80320567	3·089	0·4898655	·94494785	1990
1995	3·444	0·5370130	·80344431	3·086	0·4893649	·94522860	1995
2000	3·440	0·5365091	·80368295	3·082	0·4888656	·94550935	2000
2005	3·436	0·5360065	·80392159	3·079	0·4883677	·94579010	2005
2010	3·432	0·5355053	·80416022	3·075	0·4878711	·94607085	2010
2015	3·428	0·5350055	·80439886	3·072	0·4873758	·94635160	2015
2020	3·424	0·5345069	·80463750	3·068	0·4868818	·94663235	2020
2025	3·420	0·5340097	·80487614	3·065	0·4863892	·94691310	2025
2030	3·416	0·5335188	·80511477	3·061	0·4858979	·94719385	2030
2035	3·412	0·5330192	·80535341	3·058	0·4854079	·94747460	2035
2040	3·408	0·5325259	·80559205	3·054	0·4849192	·94775535	2040
2045	3·404	0·5320339	·80583069	3·051	0·4844318	·94803610	2045
2050	3·401	0·5315432	·80606932	3·048	0·4839457	·94831685	2050
2055	3·397	0·5310539	·80630796	3·044	0·4834610	·94859760	2055
2060	3·393	0·5305658	·80654660	3·041	0·4829775	·94887835	2060
2065	3·389	0·5300790	·80678524	3·037	0·4824952	·94915910	2065
2070	3·385	0·5295934	·80702387	3·034	0·4820142	·94943985	2070
2075	3·381	0·5291091	·80726251	3·031	0·4815344	·94972060	2075
2080	3·378	0·5286261	·80750115	3·027	0·4810560	·95000135	2080
2085	3·374	0·5281443	·80773979	3·024	0·4805788	·95028210	2085
2090	3·370	0·5276638	·80797842	3·021	0·4801029	·95056285	2090
2095	3·367	0·5271845	·80821706	3·017	0·4796281	·95084360	2095
2100	3·363	0·5267063	·80845570	3·014	0·4791546	·95112435	2100
2105	3·359	0·5262295	·80869434	3·011	0·4786823	·95140510	2105
2110	3·355	0·5257539	·80893297	3·008	0·4782113	·95168585	2110
2115	3·352	0·5252796	·80917161	3·004	0·4777414	·95196660	2115
2120	3·348	0·5248064	·80941025	3·001	0·4772730	·95224735	2120
2125	3·345	0·5243345	·80964889	2·998	0·4768055	·95252810	2125
2130	3·341	0·5238636	·80988752	2·995	0·4763393	·95280885	2130
2135	3·337	0·5233939	·81012616	2·991	0·4758742	·95308960	2135
2140	3·334	0·5229255	·81036480	2·988	0·4754103	·95337035	2140
2145	3·330	0·5224583	·81060344	2·985	0·4749477	·95365110	2145
2150	3·327	0·5219928	·81084207	2·982	0·4744863	·95393185	2150
2155	3·323	0·5215275	·81108071	2·979	0·4740260	·95421260	2155
2160	3·319	0·5210637	·81131935	2·976	0·4735668	·95449335	2160
2165	3·316	0·5206011	·81155799	2·972	0·4731088	·95477410	2165
2170	3·312	0·5201397	·81179662	2·969	0·4726519	·95505485	2170
2175	3·309	0·5196794	·81203526	2·966	0·4721962	·95533560	2175
2180	3·305	0·5192203	·81227390	2·963	0·4717417	·95561635	2180
2185	3·302	0·5187628	·81251254	2·960	0·4712883	·95589710	2185
2190	3·298	0·5183054	·81275117	2·957	0·4708359	·95617785	2190
2195	3·295	0·5178497	·81298981	2·954	0·4703848	·95645860	2195
2200	3·292	0·5173952	·81322845	2·951	0·4699348	·95673935	2200

Sine of Inclina- tion (1 over)	n = .0225			n = .0250			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1955	2·887	0·4604557	1·0608554	2·705	0·4821655	1·1787288	1955
1960	2·884	0·4599489	1·0611718	2·702	0·4816618	1·1790792	1960
1965	2·880	0·4594488	1·0614871	2·699	0·4811594	1·1794301	1965
1970	2·877	0·4589892	1·0618080	2·696	0·4806585	1·1797811	1970
1975	2·874	0·4584864	1·0621188	2·693	0·4801590	1·1801820	1975
1980	2·870	0·4579852	1·0624846	2·689	0·4296609	1·1804829	1980
1985	2·867	0·4574858	1·0627505	2·686	0·4291643	1·1808839	1985
1990	2·864	0·4569867	1·0630668	2·683	0·4286689	1·1811848	1990
1995	2·860	0·4564895	1·0633822	2·680	0·4281749	1·1815858	1995
2000	2·857	0·4559488	1·0636980	2·677	0·4276824	1·1818867	2000
2005	2·854	0·4554498	1·0640189	2·674	0·4271911	1·1822876	2005
2010	2·851	0·4549562	1·0643297	2·671	0·4267012	1·1825886	2010
2015	2·848	0·4544644	1·0646456	2·668	0·4262126	1·1829895	2015
2020	2·844	0·4539789	1·0649614	2·665	0·4257258	1·1832904	2020
2025	2·841	0·4534847	1·0652772	2·662	0·4252394	1·1836414	2025
2030	2·838	0·4529969	1·0655981	2·659	0·4247548	1·1839928	2030
2035	2·835	0·4525104	1·0659089	2·656	0·4242715	1·1843438	2035
2040	2·832	0·4520252	1·0662248	2·653	0·4237894	1·1846942	2040
2045	2·828	0·4515412	1·0665406	2·650	0·4233087	1·1850451	2045
2050	2·825	0·4510586	1·0668565	2·647	0·4228293	1·1853961	2050
2055	2·822	0·4505774	1·0671723	2·645	0·4223512	1·1857470	2055
2060	2·819	0·4500973	1·0674881	2·642	0·4218744	1·1860979	2060
2065	2·816	0·4496185	1·0678040	2·639	0·4213988	1·1864489	2065
2070	2·813	0·4491410	1·0681198	2·636	0·4209244	1·1867998	2070
2075	2·810	0·4486647	1·0684357	2·633	0·4204513	1·1871508	2075
2080	2·807	0·4481897	1·0687515	2·630	0·4199795	1·1875017	2080
2085	2·804	0·4477160	1·0690674	2·627	0·4195091	1·1878526	2085
2090	2·801	0·4472436	1·0693832	2·624	0·4190399	1·1882036	2090
2095	2·798	0·4467723	1·0696991	2·622	0·4185718	1·1885545	2095
2100	2·794	0·4463022	1·0700149	2·619	0·4181048	1·1889054	2100
2105	2·791	0·4458334	1·0703307	2·616	0·4176392	1·1892564	2105
2110	2·788	0·4453659	1·0706466	2·613	0·4171749	1·1896073	2110
2115	2·785	0·4448996	1·0709624	2·610	0·4167118	1·1899583	2115
2120	2·782	0·4444345	1·0712783	2·608	0·4162490	1·1903092	2120
2125	2·780	0·4439705	1·0715941	2·605	0·4157891	1·1906601	2125
2130	2·777	0·4435078	1·0719100	2·602	0·4153295	1·1910111	2130
2135	2·774	0·4430461	1·0722258	2·599	0·4148711	1·1913620	2135
2140	2·771	0·4425857	1·0725416	2·597	0·4144139	1·1917129	2140
2145	2·768	0·4421266	1·0728575	2·594	0·4139579	1·1920639	2145
2150	2·765	0·4416686	1·0731733	2·591	0·4135082	1·1924148	2150
2155	2·762	0·4412117	1·0734892	2·589	0·4130495	1·1927658	2155
2160	2·759	0·4407561	1·0738050	2·586	0·4125969	1·1931167	2160
2165	2·756	0·4403015	1·0741209	2·583	0·4121455	1·1934676	2165
2170	2·753	0·4398481	1·0744367	2·581	0·4116953	1·1938186	2170
2175	2·750	0·4393958	1·0747526	2·578	0·4112468	1·1941695	2175
2180	2·748	0·4389448	1·0750684	2·575	0·4107984	1·1945204	2180
2185	2·745	0·4384948	1·0753842	2·572	0·4103516	1·1948714	2185
2190	2·742	0·4380459	1·0757001	2·570	0·4099059	1·1952223	2190
2195	2·739	0·4375982	1·0760159	2·567	0·4094614	1·1955733	2195
2200	2·736	0·4371517	1·0763318	2·565	0·4090181	1·1959242	2200

Sine of Inclination (1 over)	$n = .0275$			$n = .030$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
1955	2.556	0.4075645	1.2986011	2.482	0.8859426	1.4144789	1955
1960	2.558	0.4070688	1.2989871	2.429	0.8854446	1.4148950	1960
1965	2.550	0.4065644	1.2978781	2.426	0.8849480	1.4158162	1965
1970	2.547	0.4060665	1.2977592	2.424	0.8844528	1.4157878	1970
1975	2.544	0.4055699	1.2981452	2.421	0.8839590	1.4161584	1975
1980	2.541	0.4050748	1.2985812	2.418	0.8834667	1.4165795	1980
1985	2.539	0.4045822	1.2989173	2.415	0.8829758	1.4170007	1985
1990	2.536	0.4040888	1.2993038	2.413	0.8824861	1.4174218	1990
1995	2.538	0.4035978	1.2996893	2.410	0.8819979	1.4178429	1995
2000	2.530	0.4031082	1.8000754	2.407	0.8815110	1.4182640	2000
2005	2.527	0.4026198	1.8004614	2.405	0.8810254	1.4186852	2005
2010	2.524	0.4021329	1.8008474	2.402	0.8805412	1.4191063	2010
2015	2.521	0.4016472	1.8012335	2.399	0.8800588	1.4195274	2015
2020	2.519	0.4011629	1.8016195	2.396	0.8795767	1.4199485	2020
2025	2.516	0.4006800	1.8020055	2.394	0.8790965	1.4203697	2025
2030	2.518	0.4001984	1.8023915	2.391	0.8786176	1.4207908	2030
2035	2.510	0.3997180	1.8027776	2.389	0.8781400	1.4212119	2035
2040	2.507	0.3992389	1.8031636	2.386	0.8776636	1.4216330	2040
2045	2.505	0.3987611	1.8035496	2.383	0.8771886	1.4220542	2045
2050	2.502	0.3982846	1.8039357	2.381	0.8767149	1.4224753	2050
2055	2.499	0.3978096	1.8043217	2.378	0.8762426	1.4228964	2055
2060	2.497	0.3973357	1.8047077	2.376	0.8757714	1.4233175	2060
2065	2.494	0.3968631	1.8050938	2.373	0.8753015	1.4237387	2065
2070	2.491	0.3963916	1.8054798	2.371	0.8749328	1.4241598	2070
2075	2.488	0.3959215	1.8058658	2.368	0.8743655	1.4245809	2075
2080	2.486	0.3954527	1.8062519	2.365	0.8738994	1.4250020	2080
2085	2.483	0.3949852	1.8066379	2.363	0.8734346	1.4254232	2085
2090	2.480	0.3945189	1.8070239	2.360	0.8729710	1.4258443	2090
2095	2.478	0.3940537	1.8074100	2.358	0.8725086	1.4262654	2095
2100	2.475	0.3935898	1.8077960	2.355	0.8720474	1.4266865	2100
2105	2.472	0.3931271	1.8081820	2.353	0.8715875	1.4271077	2105
2110	2.470	0.3926657	1.8085680	2.350	0.8711289	1.4275288	2110
2115	2.467	0.3922056	1.8089541	2.348	0.8706715	1.4279499	2115
2120	2.465	0.3917466	1.8093401	2.345	0.8702132	1.4283710	2120
2125	2.462	0.3912887	1.8097261	2.343	0.8697600	1.4287922	2125
2130	2.459	0.3908321	1.8101122	2.340	0.8693061	1.4292133	2130
2135	2.457	0.3903767	1.8104982	2.338	0.8688534	1.4296344	2135
2140	2.454	0.3899224	1.8108842	2.336	0.8684018	1.4300555	2140
2145	2.452	0.3894694	1.8112703	2.333	0.8679516	1.4304767	2145
2150	2.449	0.3890176	1.8116563	2.331	0.8675024	1.4308978	2150
2155	2.447	0.3885668	1.8120423	2.328	0.8670545	1.4313189	2155
2160	2.444	0.3881172	1.8124284	2.326	0.8666075	1.4317400	2160
2165	2.442	0.3876687	1.8128144	2.324	0.8661619	1.4321612	2165
2170	2.439	0.3872216	1.8132004	2.321	0.8657173	1.4325823	2170
2175	2.437	0.3867754	1.8135865	2.319	0.8652739	1.4330034	2175
2180	2.434	0.3863304	1.8139725	2.316	0.8648317	1.4334245	2180
2185	2.432	0.3858866	1.8143585	2.314	0.8643906	1.4338457	2185
2190	2.429	0.3854438	1.8147445	2.312	0.8639505	1.4342668	2190
2195	2.427	0.3850022	1.8151306	2.309	0.8635117	1.4346879	2195
2200	2.424	0.3845618	1.8155166	2.307	0.8630740	1.4351090	2200

Sine of Inclina- tion (1 over)	$n = .035$			$n = .050$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
1955	2.237	0.8496284	1.6502196	1.886	0.2754657	2.3574565	1955
1960	2.234	0.8491354	1.6507109	1.884	0.2749842	2.3581584	1960
1965	2.232	0.8486487	1.6512022	1.881	0.2745040	2.3588603	1965
1970	2.229	0.8481584	1.6516935	1.879	0.2740252	2.3595621	1970
1975	2.227	0.8476646	1.6521848	1.877	0.2735478	2.3602640	1975
1980	2.224	0.8471772	1.6526761	1.875	0.2730719	2.3609659	1980
1985	2.222	0.8466912	1.6531674	1.873	0.2725973	2.3616678	1985
1990	2.219	0.8462065	1.6536587	1.871	0.2721240	2.3623696	1990
1995	2.217	0.8457232	1.6541501	1.869	0.2716522	2.3630715	1995
2000	2.214	0.8452412	1.6546414	1.867	0.2711817	2.3637734	2000
2005	2.212	0.8447606	1.6551327	1.865	0.2707125	2.3644753	2005
2010	2.209	0.8442814	1.6556240	1.863	0.2702447	2.3651771	2010
2015	2.207	0.8438034	1.6561153	1.861	0.2697782	2.3658790	2015
2020	2.205	0.8433267	1.6566066	1.859	0.2693129	2.3665809	2020
2025	2.202	0.8428515	1.6570979	1.857	0.2688491	2.3672828	2025
2030	2.200	0.8423775	1.6575892	1.855	0.2683865	2.3679846	2030
2035	2.197	0.8419048	1.6580806	1.853	0.2679253	2.3686865	2035
2040	2.195	0.8414334	1.6585719	1.851	0.2674658	2.3693884	2040
2045	2.193	0.8409633	1.6590632	1.849	0.2670066	2.3700903	2045
2050	2.190	0.8404945	1.6595545	1.847	0.2665492	2.3707921	2050
2055	2.188	0.8400270	1.6600458	1.845	0.2660932	2.3714940	2055
2060	2.186	0.8395608	1.6605371	1.843	0.2656384	2.3721959	2060
2065	2.183	0.8390958	1.6610284	1.842	0.2651848	2.3728978	2065
2070	2.181	0.8386320	1.6615197	1.840	0.2647325	2.3735996	2070
2075	2.179	0.8381696	1.6620111	1.838	0.2642814	2.3743015	2075
2080	2.176	0.8377085	1.6625024	1.836	0.2638316	2.3750034	2080
2085	2.174	0.8372486	1.6629937	1.834	0.2633831	2.3757053	2085
2090	2.172	0.8367899	1.6634850	1.832	0.2629358	2.3764071	2090
2095	2.169	0.8363324	1.6639763	1.830	0.2624896	2.3771090	2095
2100	2.167	0.8358761	1.6644676	1.828	0.2620447	2.3778109	2100
2105	2.165	0.8354211	1.6649589	1.826	0.2616011	2.3785128	2105
2110	2.163	0.8349673	1.6654502	1.825	0.2611587	2.3792146	2110
2115	2.160	0.8345148	1.6659416	1.823	0.2607176	2.3799165	2115
2120	2.158	0.8340634	1.6664329	1.821	0.2602776	2.3806184	2120
2125	2.156	0.8336138	1.6669242	1.819	0.2598388	2.3813203	2125
2130	2.154	0.8331642	1.6674155	1.817	0.2594011	2.3820221	2130
2135	2.151	0.8327164	1.6679068	1.815	0.2589646	2.3827240	2135
2140	2.149	0.8322697	1.6683981	1.814	0.2585293	2.3834259	2140
2145	2.147	0.8318243	1.6688894	1.812	0.2580958	2.3841278	2145
2150	2.145	0.8313801	1.6693807	1.810	0.2576624	2.3848296	2150
2155	2.143	0.8309370	1.6698721	1.808	0.2572306	2.3855315	2155
2160	2.140	0.8304950	1.6703634	1.806	0.2568000	2.3862334	2160
2165	2.138	0.8300542	1.6708547	1.805	0.2563705	2.3869353	2165
2170	2.136	0.8296145	1.6713460	1.803	0.2559422	2.3876371	2170
2175	2.134	0.8291760	1.6718373	1.801	0.2555150	2.3883390	2175
2180	2.132	0.8287387	1.6723286	1.799	0.2550889	2.3890409	2180
2185	2.130	0.8283024	1.6728199	1.797	0.2546639	2.3897428	2185
2190	2.128	0.8278673	1.6733112	1.796	0.2542401	2.3904446	2190
2195	2.125	0.8274333	1.6738026	1.794	0.2538175	2.3911465	2195
2200	2.123	0.8270005	1.6742939	1.792	0.2533960	2.3918484	2200

Sine of Inclina- tion (1 over)	$n = \cdot009$			$n = \cdot010$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	5·805	0·7246858	·48065905	4·876	0·6881000	·47851005	2205
2210	5·299	0·7242184	·48078538	4·871	0·6876847	·47865043	2210
2215	5·294	0·7237521	·48091172	4·866	0·6871705	·47879080	2215
2220	5·288	0·7232869	·48103806	4·861	0·6867075	·47893118	2220
2225	5·282	0·7228229	·48116440	4·856	0·6862456	·47907155	2225
2230	5·277	0·7223600	·48129073	4·850	0·6857849	·47921193	2230
2235	5·271	0·7218981	·48141707	4·845	0·6853252	·47935230	2235
2240	5·265	0·7214373	·48154341	4·840	0·6848665	·47949268	2240
2245	5·260	0·7209776	·48166975	4·835	0·6844089	·47963305	2245
2250	5·254	0·7205189	·48179608	4·830	0·6839524	·47977343	2250
2255	5·249	0·7200614	·48192242	4·825	0·6834970	·47991380	2255
2260	5·243	0·7196049	·48204876	4·820	0·6830427	·48005418	2260
2265	5·238	0·7191495	·48217510	4·815	0·6825894	·48019455	2265
2270	5·232	0·7186952	·48230143	4·810	0·6821372	·48033493	2270
2275	5·227	0·7182419	·48242777	4·805	0·6816860	·48047530	2275
2280	5·221	0·7177895	·48255411	4·800	0·6812358	·48061568	2280
2285	5·216	0·7173382	·48268045	4·795	0·6807867	·48075605	2285
2290	5·211	0·7168880	·48280678	4·790	0·6803387	·48089643	2290
2295	5·205	0·7164389	·48293312	4·785	0·6798917	·48103680	2295
2300	5·200	0·7159908	·48305946	4·780	0·6794458	·48117718	2300
2305	5·195	0·7155438	·48318580	4·775	0·6790009	·48131755	2305
2310	5·189	0·7150976	·48331213	4·770	0·6785569	·48145793	2310
2315	5·184	0·7146525	·48343847	4·766	0·6781140	·48159830	2315
2320	5·179	0·7142085	·48356481	4·761	0·6776721	·48173868	2320
2325	5·173	0·7137654	·48369115	4·756	0·6772311	·48187905	2325
2330	5·168	0·7133233	·48381748	4·751	0·6767912	·48201943	2330
2335	5·163	0·7128823	·48394382	4·746	0·6763523	·48215980	2335
2340	5·158	0·7124422	·48407016	4·741	0·6759144	·48230018	2340
2345	5·152	0·7120031	·48419650	4·737	0·6754774	·48244055	2345
2350	5·147	0·7115652	·48432283	4·732	0·6750416	·48258093	2350
2355	5·142	0·7111281	·48444917	4·727	0·6746066	·48272130	2355
2360	5·137	0·7106919	·48457551	4·723	0·6741726	·48286168	2360
2365	5·132	0·7102567	·48470185	4·718	0·6737396	·48300205	2365
2370	5·127	0·7098225	·48482818	4·713	0·6733076	·48314243	2370
2375	5·121	0·7093893	·48495452	4·708	0·6728705	·48328280	2375
2380	5·116	0·7089572	·48508086	4·704	0·6724465	·48342318	2380
2385	5·111	0·7085259	·48520720	4·699	0·6720174	·48356355	2385
2390	5·106	0·7080955	·48533353	4·694	0·6715891	·48370393	2390
2395	5·101	0·7076662	·48545987	4·690	0·6711619	·48384430	2395
2400	5·096	0·7072378	·48558621	4·685	0·6707387	·48398468	2400
2405	5·091	0·7068108	·48571255	4·681	0·6703103	·48412505	2405
2410	5·086	0·7063837	·48583888	4·676	0·6698858	·48426543	2410
2415	5·081	0·7059580	·48596522	4·672	0·6694623	·48440580	2415
2420	5·076	0·7055333	·48609156	4·667	0·6690398	·48454618	2420
2425	5·071	0·7051095	·48621790	4·662	0·6686181	·48468655	2425
2430	5·066	0·7046866	·48634423	4·658	0·6681974	·48482693	2430
2435	5·061	0·7042647	·48647057	4·653	0·6677776	·48496730	2435
2440	5·056	0·7038437	·48659691	4·649	0·6673587	·48510768	2440
2445	5·052	0·7034236	·48672325	4·645	0·6669408	·48524805	2445
2450	5·047	0·7030044	·48684958	4·640	0·6665238	·48538843	2450

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	4·526	0·6556898	·52686106	4·284	0·6267007	·57421206	2205
2210	4·521	0·6552261	·52651547	4·229	0·6262894	·57488051	2210
2215	4·516	0·6547640	·52666988	4·225	0·6257793	·57454896	2215
2220	4·511	0·6543081	·52682429	4·220	0·6253304	·57471741	2220
2225	4·507	0·6538482	·52697871	4·216	0·6248625	·57488586	2225
2230	4·502	0·6533845	·52713812	4·211	0·6244058	·57505481	2230
2235	4·497	0·6529269	·52728753	4·207	0·6239501	·57522276	2235
2240	4·492	0·6524702	·52744194	4·202	0·6234955	·57539121	2240
2245	4·488	0·6520147	·52759636	4·198	0·6230420	·57555966	2245
2250	4·483	0·6515608	·52775077	4·194	0·6225895	·57572811	2250
2255	4·478	0·6511070	·52790518	4·189	0·6221382	·57589656	2255
2260	4·474	0·6506548	·52805959	4·185	0·6216879	·57606501	2260
2265	4·469	0·6502035	·52821401	4·181	0·6212386	·57623346	2265
2270	4·464	0·6497584	·52836842	4·176	0·6207905	·57640191	2270
2275	4·460	0·6493042	·52852283	4·172	0·6203433	·57657086	2275
2280	4·455	0·6488561	·52867724	4·168	0·6198971	·57673881	2280
2285	4·451	0·6484090	·52883166	4·163	0·6194520	·57690726	2285
2290	4·446	0·6479631	·52898607	4·159	0·6190081	·57707571	2290
2295	4·441	0·6475182	·52914048	4·155	0·6185652	·57724416	2295
2300	4·437	0·6470743	·52929489	4·151	0·6181283	·57741261	2300
2305	4·432	0·6466325	·52944931	4·147	0·6176824	·57758106	2305
2310	4·428	0·6461895	·52960372	4·142	0·6172424	·57774951	2310
2315	4·423	0·6457486	·52975813	4·138	0·6168035	·57791796	2315
2320	4·419	0·6453088	·52991254	4·134	0·6163657	·57808641	2320
2325	4·414	0·6448700	·53006696	4·130	0·6159288	·57825486	2325
2330	4·410	0·6444321	·53022137	4·126	0·6154929	·57842331	2330
2335	4·406	0·6439952	·53037578	4·122	0·6150580	·57859176	2335
2340	4·401	0·6435594	·53053019	4·117	0·6146241	·57876021	2340
2345	4·397	0·6431246	·53068461	4·113	0·6141912	·57892866	2345
2350	4·392	0·6426908	·53083902	4·109	0·6137594	·57909711	2350
2355	4·388	0·6422577	·53099343	4·105	0·6133284	·57926556	2355
2360	4·384	0·6418257	·53114784	4·101	0·6128984	·57943401	2360
2365	4·379	0·6413947	·53130226	4·097	0·6124694	·57960246	2365
2370	4·375	0·6409648	·53145667	4·093	0·6120414	·57977091	2370
2375	4·371	0·6405359	·53161108	4·089	0·6116144	·57993936	2375
2380	4·366	0·6401079	·53176549	4·085	0·6111884	·58010781	2380
2385	4·362	0·6396808	·53191991	4·081	0·6107633	·58027626	2385
2390	4·358	0·6392546	·53207432	4·077	0·6103391	·58044471	2390
2395	4·353	0·6388293	·53222873	4·073	0·6099159	·58061316	2395
2400	4·349	0·6384051	·53238314	4·069	0·6094936	·58078161	2400
2405	4·345	0·6379819	·53253756	4·065	0·6090723	·58095006	2405
2410	4·341	0·6375596	·53269197	4·061	0·6086519	·58111851	2410
2415	4·336	0·6371381	·53284638	4·057	0·6082324	·58128696	2415
2420	4·332	0·6367176	·53300079	4·053	0·6078138	·58145541	2420
2425	4·328	0·6362980	·53315521	4·049	0·6073962	·58162386	2425
2430	4·324	0·6358792	·53330962	4·046	0·6069795	·58179231	2430
2435	4·320	0·6354615	·53346403	4·042	0·6065638	·58196076	2435
2440	4·316	0·6350448	·53361844	4·038	0·6061489	·58212921	2440
2445	4·312	0·6346289	·53377286	4·034	0·6057350	·58229766	2445
2450	4·307	0·6342139	·53392727	4·030	0·6053220	·58246611	2450

Sine of Inclina- tion (1 over)	$n = \cdot 013$			$n = \cdot 014$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	3·986	0·6005688	·62206307	3·774	0·5768868	·66991407	2205
2210	3·982	0·6001044	·62224555	3·770	0·5768788	·67011060	2210
2215	3·978	0·5996462	·62242804	3·766	0·5759224	·67080712	2215
2220	3·974	0·5991892	·62261053	3·762	0·5754672	·67050865	2220
2225	3·969	0·5987382	·62279802	3·758	0·5750181	·67070017	2225
2230	3·965	0·5982784	·62297550	3·755	0·5745601	·67089670	2230
2235	3·961	0·5978247	·62315799	3·751	0·5741082	·67109822	2235
2240	3·957	0·5973719	·62334048	3·747	0·5736572	·67129975	2240
2245	3·953	0·5969202	·62352297	3·743	0·5732074	·67149627	2245
2250	3·949	0·5964697	·62370545	3·739	0·5727587	·67168280	2250
2255	3·945	0·5960202	·62388794	3·735	0·5723111	·67187982	2255
2260	3·941	0·5955719	·62407048	3·731	0·5718645	·67207585	2260
2265	3·937	0·5951245	·62425292	3·728	0·5714190	·67227287	2265
2270	3·933	0·5946783	·62443540	3·724	0·5709746	·67246890	2270
2275	3·929	0·5942330	·62461789	3·720	0·5705312	·67266542	2275
2280	3·925	0·5937887	·62480038	3·716	0·5700887	·67286195	2280
2285	3·921	0·5933456	·62498287	3·712	0·5696478	·67305847	2285
2290	3·917	0·5929035	·62516535	3·709	0·5692070	·67325500	2290
2295	3·913	0·5924624	·62534784	3·705	0·5687678	·67345152	2295
2300	3·909	0·5920224	·62553033	3·701	0·5683297	·67364805	2300
2305	3·905	0·5915884	·62571282	3·697	0·5678925	·67384457	2305
2310	3·901	0·5911458	·62589530	3·694	0·5674568	·67404110	2310
2315	3·897	0·5907084	·62607779	3·690	0·5670211	·67423762	2315
2320	3·893	0·5902724	·62626028	3·686	0·5665870	·67443415	2320
2325	3·889	0·5898374	·62644277	3·683	0·5661588	·67463067	2325
2330	3·885	0·5894084	·62662525	3·679	0·5657216	·67482720	2330
2335	3·881	0·5889705	·62680774	3·675	0·5652905	·67502372	2335
2340	3·877	0·5885385	·62699023	3·672	0·5648608	·67522025	2340
2345	3·874	0·5881075	·62717272	3·668	0·5644311	·67541677	2345
2350	3·870	0·5876776	·62735520	3·664	0·5640080	·67561330	2350
2355	3·866	0·5872484	·62753769	3·661	0·5635757	·67580982	2355
2360	3·862	0·5868203	·62772018	3·657	0·5631495	·67600635	2360
2365	3·858	0·5863982	·62790267	3·654	0·5627242	·67620287	2365
2370	3·854	0·5859871	·62808515	3·650	0·5622999	·67639940	2370
2375	3·851	0·5855420	·62826764	3·647	0·5618766	·67659592	2375
2380	3·847	0·5851179	·62845013	3·643	0·5614543	·67679245	2380
2385	3·843	0·5846947	·62863262	3·639	0·5610329	·67698897	2385
2390	3·839	0·5842728	·62881510	3·636	0·5606124	·67718550	2390
2395	3·836	0·5838510	·62899759	3·632	0·5601929	·67738202	2395
2400	3·832	0·5834307	·62918008	3·629	0·5597744	·67757855	2400
2405	3·828	0·5830113	·62936257	3·625	0·5593568	·67777507	2405
2410	3·825	0·5825928	·62954505	3·622	0·5589401	·67797160	2410
2415	3·821	0·5821751	·62972754	3·618	0·5585242	·67816812	2415
2420	3·817	0·5817585	·62991003	3·615	0·5581094	·67836465	2420
2425	3·814	0·5813427	·63009252	3·612	0·5576955	·67856117	2425
2430	3·810	0·5809279	·63027500	3·608	0·5572825	·67875770	2430
2435	3·806	0·5805141	·63045749	3·605	0·5568705	·67895422	2435
2440	3·803	0·5801011	·63063998	3·601	0·5564598	·67915075	2440
2445	3·799	0·5796891	·63082247	3·598	0·5560491	·67934727	2445
2450	3·796	0·5792779	·63100495	3·595	0·5556397	·67954380	2450

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	3·591	0·5551689	·71776508	3·288	0·5189418	·81846709	2205
2210	3·587	0·5547181	·71797564	3·285	0·5164894	·81870572	2210
2215	3·583	0·5542584	·71818620	3·281	0·5160380	·81894486	2215
2220	3·579	0·5538050	·71839676	3·278	0·5155879	·81418300	2220
2225	3·576	0·5535526	·71860733	3·274	0·5151889	·81442164	2225
2230	3·572	0·5529013	·71881789	3·271	0·5146909	·81466027	2230
2235	3·568	0·5524511	·71902845	3·268	0·5142441	·81489891	2235
2240	3·565	0·5520020	·71923902	3·264	0·5137983	·81513755	2240
2245	3·561	0·5515539	·71944958	3·261	0·5133535	·81537619	2245
2250	3·557	0·5511070	·71966014	3·258	0·5129099	·81561482	2250
2255	3·554	0·5506611	·71987070	3·254	0·5124674	·81585346	2255
2260	3·550	0·5502163	·72008126	3·251	0·5120259	·81609210	2260
2265	3·546	0·5497725	·72029183	3·248	0·5115855	·81633074	2265
2270	3·543	0·5493299	·72050239	3·244	0·5111461	·81656937	2270
2275	3·539	0·5488882	·72071295	3·241	0·5107078	·81680801	2275
2280	3·535	0·5484475	·72092351	3·238	0·5102704	·81704665	2280
2285	3·532	0·5480079	·72113408	3·235	0·5098341	·81728529	2285
2290	3·528	0·5475694	·72134464	3·231	0·5093989	·81752392	2290
2295	3·525	0·5471319	·72155520	3·228	0·5089647	·81776256	2295
2300	3·521	0·5466955	·72176576	3·225	0·5085317	·81800120	2300
2305	3·518	0·5462601	·72197633	3·222	0·5080996	·81823984	2305
2310	3·514	0·5458256	·72218689	3·219	0·5076884	·81847847	2310
2315	3·511	0·5453922	·72239745	3·215	0·5072383	·81871711	2315
2320	3·507	0·5449598	·72260801	3·212	0·5068092	·81895575	2320
2325	3·504	0·5445284	·72281858	3·209	0·5063811	·81919439	2325
2330	3·500	0·5440980	·72302914	3·206	0·5059540	·81943302	2330
2335	3·497	0·5436686	·72323970	3·203	0·5055279	·81967166	2335
2340	3·493	0·5432402	·72345026	3·200	0·5051027	·81991030	2340
2345	3·490	0·5428127	·72366083	3·197	0·5046786	·82014894	2345
2350	3·486	0·5423864	·72387139	3·193	0·5042556	·82038757	2350
2355	3·483	0·5419609	·72408195	3·190	0·5038334	·82062621	2355
2360	3·480	0·5415363	·72429251	3·187	0·5034122	·82086485	2360
2365	3·476	0·5411128	·72450308	3·184	0·5029920	·82110349	2365
2370	3·473	0·5406903	·72471364	3·181	0·5025728	·82134212	2370
2375	3·470	0·5402687	·72492420	3·178	0·5021545	·82158076	2375
2380	3·466	0·5398482	·72513476	3·175	0·5017373	·82181940	2380
2385	3·463	0·5394285	·72534533	3·172	0·5013209	·82205804	2385
2390	3·459	0·5389998	·72555589	3·169	0·5009055	·82229667	2390
2395	3·456	0·5385920	·72576645	3·166	0·5004910	·82253531	2395
2400	3·453	0·5381752	·72597701	3·163	0·5000776	·82277395	2400
2405	3·450	0·5377594	·72618758	3·160	0·4996650	·82301259	2405
2410	3·446	0·5373445	·72639814	3·157	0·4992533	·82325122	2410
2415	3·443	0·5369304	·72660870	3·154	0·4988426	·82348986	2415
2420	3·440	0·5365173	·72681926	3·151	0·4984328	·82372850	2420
2425	3·436	0·5361051	·72702983	3·148	0·4980239	·82396714	2425
2430	3·433	0·5356938	·72724039	3·145	0·4976159	·82420577	2430
2435	3·430	0·5352835	·72745095	3·142	0·4972090	·82444441	2435
2440	3·427	0·5348742	·72766151	3·139	0·4968029	·82468305	2440
2445	3·423	0·5344657	·72787208	3·136	0·4963977	·82492169	2445
2450	3·420	0·5340581	·72808264	3·133	0·4959934	·82516032	2450

Sine of Inclina- tion (1 over)	<i>n</i> = .020			<i>n</i> = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	2.948	0.4694860	.95702010	2.733	0.4367063	1.0766476	2205
2210	2.945	0.4690382	.95730085	2.731	0.4362619	1.0769635	2210
2215	2.942	0.4685914	.95758160	2.728	0.4358186	1.0772793	2215
2220	2.939	0.4681458	.95786235	2.725	0.4353765	1.0775951	2220
2225	2.936	0.4677018	.95814310	2.722	0.4349354	1.0779110	2225
2230	2.933	0.4672579	.95842385	2.720	0.4344955	1.0782268	2230
2235	2.930	0.4668156	.95870460	2.717	0.4340567	1.0785427	2235
2240	2.927	0.4663744	.95898535	2.714	0.4336189	1.0788585	2240
2245	2.924	0.4659342	.95926610	2.711	0.4331821	1.0791744	2245
2250	2.921	0.4654951	.95954685	2.709	0.4327464	1.0794902	2250
2255	2.918	0.4650571	.95982760	2.706	0.4323119	1.0798061	2255
2260	2.915	0.4646202	.96010835	2.703	0.4318784	1.0801219	2260
2265	2.912	0.4641843	.96038910	2.701	0.4314460	1.0804377	2265
2270	2.909	0.4637495	.96066985	2.698	0.4310147	1.0807536	2270
2275	2.906	0.4633157	.96095060	2.695	0.4305843	1.0810694	2275
2280	2.903	0.4628829	.96123135	2.692	0.4301549	1.0813853	2280
2285	2.900	0.4624511	.96151210	2.690	0.4297266	1.0817011	2285
2290	2.897	0.4620205	.96179285	2.687	0.4292994	1.0820170	2290
2295	2.895	0.4615908	.96207360	2.685	0.4288732	1.0823328	2295
2300	2.892	0.4611628	.96235435	2.682	0.4284481	1.0826486	2300
2305	2.889	0.4607348	.96263510	2.679	0.4280240	1.0829645	2305
2310	2.886	0.4603081	.96291585	2.677	0.4276008	1.0832803	2310
2315	2.883	0.4598826	.96319660	2.674	0.4271787	1.0835962	2315
2320	2.880	0.4594580	.96347735	2.672	0.4267576	1.0839120	2320
2325	2.878	0.4590344	.96375810	2.669	0.4263375	1.0842279	2325
2330	2.875	0.4586119	.96403885	2.666	0.4259188	1.0845437	2330
2335	2.872	0.4581903	.96431960	2.664	0.4255002	1.0848596	2335
2340	2.869	0.4577698	.96460035	2.661	0.4250830	1.0851754	2340
2345	2.866	0.4573502	.96488110	2.659	0.4246669	1.0854912	2345
2350	2.864	0.4569317	.96516185	2.656	0.4242518	1.0858071	2350
2355	2.861	0.4565140	.96544260	2.654	0.4238376	1.0861229	2355
2360	2.858	0.4560978	.96572335	2.651	0.4234248	1.0864388	2360
2365	2.855	0.4556816	.96600410	2.649	0.4230121	1.0867546	2365
2370	2.853	0.4552669	.96628485	2.646	0.4226008	1.0870705	2370
2375	2.850	0.4548532	.96656560	2.644	0.4221905	1.0873863	2375
2380	2.847	0.4544405	.96684635	2.641	0.4217812	1.0877021	2380
2385	2.845	0.4540287	.96712710	2.639	0.4213728	1.0880180	2385
2390	2.842	0.4536178	.96740785	2.636	0.4209653	1.0883338	2390
2395	2.839	0.4532079	.96768860	2.634	0.4205588	1.0886497	2395
2400	2.837	0.4527989	.96796935	2.631	0.4201533	1.0889655	2400
2405	2.834	0.4523909	.96825010	2.629	0.4197487	1.0892814	2405
2410	2.831	0.4519837	.96853085	2.626	0.4193450	1.0895972	2410
2415	2.829	0.4515775	.96881160	2.624	0.4189422	1.0899131	2415
2420	2.826	0.4511722	.96909235	2.621	0.4185404	1.0902289	2420
2425	2.823	0.4507679	.96937310	2.619	0.4181394	1.0905447	2425
2430	2.821	0.4503645	.96965385	2.617	0.4177394	1.0908606	2430
2435	2.818	0.4499620	.96993460	2.614	0.4173404	1.0911764	2435
2440	2.816	0.4495604	.97021535	2.612	0.4169422	1.0914923	2440
2445	2.813	0.4491597	.97049610	2.609	0.4165450	1.0918081	2445
2450	2.810	0.4487599	.97077685	2.607	0.4161486	1.0921240	2450

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	2.562	0.4085759	1.1962751	2.422	0.8841225	1.8159026	2205
2210	2.559	0.4081846	1.1966261	2.419	0.8886842	1.8162887	2210
2215	2.557	0.4076945	1.1969770	2.417	0.8832470	1.8166747	2215
2220	2.554	0.4072556	1.1973279	2.414	0.8828110	1.8170607	2220
2225	2.552	0.4068177	1.1976789	2.412	0.8823761	1.8174468	2225
2230	2.549	0.4068809	1.1980298	2.410	0.8819428	1.8178328	2230
2235	2.547	0.4059458	1.1983808	2.407	0.8815096	1.8182188	2235
2240	2.544	0.4055106	1.1987317	2.405	0.8810778	1.8186049	2240
2245	2.541	0.4050771	1.1990826	2.402	0.8806472	1.8189909	2245
2250	2.539	0.4046446	1.1994836	2.400	0.8802176	1.8193769	2250
2255	2.536	0.4042182	1.1997845	2.398	0.8797892	1.8197630	2255
2260	2.534	0.4037829	1.2001854	2.395	0.8793618	1.8201490	2260
2265	2.531	0.4033536	1.2004864	2.393	0.8789355	1.8205350	2265
2270	2.529	0.4029254	1.2008373	2.391	0.8785102	1.8209210	2270
2275	2.526	0.4024982	1.2011883	2.388	0.8780859	1.8213071	2275
2280	2.524	0.4020720	1.2015892	2.386	0.8776627	1.8216931	2280
2285	2.521	0.4016469	1.2018901	2.384	0.8772404	1.8220791	2285
2290	2.519	0.4012229	1.2022411	2.381	0.8768193	1.8224652	2290
2295	2.517	0.4007998	1.2025920	2.379	0.8763992	1.8228512	2295
2300	2.514	0.4003779	1.2029429	2.377	0.8759802	1.8232372	2300
2305	2.512	0.3999570	1.2032939	2.374	0.8755622	1.8236233	2305
2310	2.509	0.3995369	1.2036448	2.372	0.8751451	1.8240093	2310
2315	2.507	0.3991179	1.2039958	2.370	0.8747291	1.8243953	2315
2320	2.504	0.3987000	1.2043467	2.368	0.8743140	1.8247814	2320
2325	2.502	0.3982830	1.2046976	2.365	0.8738900	1.8251674	2325
2330	2.500	0.3978670	1.2050486	2.363	0.8734869	1.8255534	2330
2335	2.497	0.3974521	1.2053995	2.361	0.8730749	1.8259395	2335
2340	2.495	0.3970381	1.2057504	2.359	0.8726638	1.8263255	2340
2345	2.492	0.3966251	1.2061014	2.356	0.8722537	1.8267115	2345
2350	2.490	0.3962132	1.2064523	2.354	0.8718448	1.8270975	2350
2355	2.488	0.3958021	1.2068033	2.352	0.8714366	1.8274836	2355
2360	2.485	0.3953921	1.2071542	2.350	0.8710294	1.8278696	2360
2365	2.483	0.3949829	1.2075051	2.348	0.8706232	1.8282556	2365
2370	2.481	0.3945748	1.2078561	2.345	0.8702180	1.8286417	2370
2375	2.478	0.3941677	1.2082070	2.343	0.8698188	1.8290277	2375
2380	2.476	0.3937616	1.2085579	2.341	0.8694105	1.8294137	2380
2385	2.474	0.3933563	1.2089089	2.339	0.8690082	1.8297998	2385
2390	2.471	0.3929520	1.2092598	2.337	0.8686068	1.8301858	2390
2395	2.469	0.3925486	1.2096108	2.335	0.8682064	1.8305718	2395
2400	2.467	0.3921462	1.2099617	2.332	0.8678069	1.8309579	2400
2405	2.465	0.3917448	1.2103126	2.330	0.8674083	1.8313439	2405
2410	2.462	0.3913443	1.2106636	2.328	0.8670107	1.8317299	2410
2415	2.460	0.3909446	1.2110145	2.326	0.8666139	1.8321160	2415
2420	2.458	0.3905459	1.2113654	2.324	0.8662182	1.8325020	2420
2425	2.456	0.3901481	1.2117164	2.322	0.8658233	1.8328880	2425
2430	2.453	0.3897512	1.2120673	2.320	0.8654294	1.8332740	2430
2435	2.451	0.3893553	1.2124183	2.318	0.8650363	1.8336601	2435
2440	2.449	0.3889603	1.2127692	2.315	0.8646442	1.8340461	2440
2445	2.447	0.3885662	1.2131201	2.313	0.8642530	1.8344321	2445
2450	2.444	0.3881730	1.2134711	2.311	0.8638627	1.8348182	2450

Sine of Inclina- tion (1 over)	$n = \cdot 030$			$n = \cdot 035$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2205	2·805	0·8626874	1·4855802	2·121	0·8265688	1·6747852	2205
2210	2·808	0·8622018	1·4859518	2·119	0·8261881	1·6752765	2210
2215	2·800	0·8617674	1·4863724	2·117	0·8257085	1·6757878	2215
2220	2·298	0·8618341	1·4867935	2·115	0·8252801	1·6762591	2220
2225	2·296	0·8609019	1·4872147	2·118	0·8248528	1·6767504	2225
2230	2·298	0·8604708	1·4876358	2·111	0·8244265	1·6772417	2230
2235	2·291	0·8600408	1·4880569	2·109	0·8240014	1·6777331	2235
2240	2·289	0·8596117	1·4884780	2·107	0·8235778	1·6782244	2240
2245	2·287	0·8591838	1·4888992	2·105	0·8231542	1·6787157	2245
2250	2·284	0·8587570	1·4893203	2·102	0·8227322	1·6792070	2250
2255	2·282	0·8583318	1·4897414	2·100	0·8223118	1·6796983	2255
2260	2·280	0·8579066	1·4401625	2·098	0·8218916	1·6801896	2260
2265	2·278	0·8574890	1·4405837	2·096	0·8214728	1·6806809	2265
2270	2·275	0·8570604	1·4410048	2·094	0·8210551	1·6811722	2270
2275	2·278	0·8566388	1·4414259	2·092	0·8206384	1·6816636	2275
2280	2·271	0·8562188	1·4418470	2·090	0·8202227	1·6821549	2280
2285	2·269	0·8557988	1·4422682	2·088	0·8198080	1·6826462	2285
2290	2·267	0·8553804	1·4426893	2·086	0·8193945	1·6831375	2290
2295	2·264	0·8549630	1·4431104	2·084	0·8189820	1·6836288	2295
2300	2·262	0·8545467	1·4435315	2·082	0·8185705	1·6841201	2300
2305	2·260	0·8541314	1·4439527	2·080	0·8181600	1·6846114	2305
2310	2·258	0·8537169	1·4443738	2·079	0·8177505	1·6851027	2310
2315	2·256	0·8533036	1·4447949	2·077	0·8173420	1·6855941	2315
2320	2·254	0·8528912	1·4452160	2·075	0·8169345	1·6860854	2320
2325	2·252	0·8524799	1·4456372	2·073	0·8165280	1·6865767	2325
2330	2·250	0·8520695	1·4460583	2·071	0·8161225	1·6870680	2330
2335	2·247	0·8516602	1·4464794	2·069	0·8157180	1·6875593	2335
2340	2·245	0·8512518	1·4469005	2·067	0·8153205	1·6880506	2340
2345	2·243	0·8508445	1·4473217	2·065	0·8149119	1·6885419	2345
2350	2·241	0·8504382	1·4477428	2·063	0·8145104	1·6890332	2350
2355	2·239	0·8500327	1·4481639	2·061	0·8141098	1·6895246	2355
2360	2·237	0·8496282	1·4485850	2·059	0·8137102	1·6900159	2360
2365	2·235	0·8492247	1·4490062	2·057	0·8133115	1·6905072	2365
2370	2·233	0·8488223	1·4494273	2·055	0·8129138	1·6909985	2370
2375	2·231	0·8484207	1·4498484	2·054	0·8125172	1·6914898	2375
2380	2·229	0·8480202	1·4502695	2·052	0·8121215	1·6919811	2380
2385	2·226	0·8476206	1·4506907	2·050	0·8117267	1·6924724	2385
2390	2·224	0·8472218	1·4511118	2·048	0·8113328	1·6929637	2390
2395	2·222	0·8468241	1·4515329	2·046	0·8109399	1·6934551	2395
2400	2·220	0·8464278	1·4519540	2·044	0·8105480	1·6939464	2400
2405	2·218	0·8460315	1·4523752	2·042	0·8101569	1·6944377	2405
2410	2·216	0·8456365	1·4527963	2·041	0·8097668	1·6949290	2410
2415	2·214	0·8452424	1·4532174	2·039	0·8093775	1·6954203	2415
2420	2·212	0·8448494	1·4536385	2·037	0·8089898	1·6959116	2420
2425	2·210	0·8444572	1·4540597	2·035	0·8086019	1·6964029	2425
2430	2·208	0·8440659	1·4544808	2·033	0·8082154	1·6968942	2430
2435	2·206	0·8436756	1·4549019	2·032	0·8078299	1·6973855	2435
2440	2·204	0·8432861	1·4553230	2·030	0·8074454	1·6978769	2440
2445	2·202	0·8428976	1·4557442	2·028	0·8070617	1·6983682	2445
2450	2·200	0·8425100	1·4561653	2·026	0·8066789	1·6988595	2450

Sine of Inclina- tion (1 over)	n = .050			Sine of Inclina- tion (1 over)	n = .009		
	N	log. N	D		N	log. N	D
2205	1.791	0.2529756	2.8925508	2455	5.042	0.7025861	.43897592
2210	1.789	0.2525562	2.8982521	2460	5.087	0.7021687	.43710226
2215	1.787	0.2521379	2.8989540	2465	5.082	0.7017522	.43722860
2220	1.785	0.2517208	2.8946559	2470	5.027	0.7013866	.43735493
2225	1.784	0.2513047	2.8958578	2475	5.028	0.7009219	.43748127
2230	1.782	0.2508898	2.8960596	2480	5.018	0.7005080	.43760761
2235	1.780	0.2504759	2.8967615	2485	5.018	0.7000950	.43773395
2240	1.779	0.2500631	2.8974634	2490	5.008	0.6996829	.43786028
2245	1.777	0.2496518	2.8981658	2495	5.044	0.6992717	.43798662
2250	1.775	0.2492406	2.8988671	2500	4.999	0.6988614	.43811296
2255	1.773	0.2488310	2.8995690	2505	4.994	0.6984519	.43823930
2260	1.772	0.2484225	2.4002709	2510	4.989	0.6980433	.43836563
2265	1.770	0.2480150	2.4009728	2515	4.985	0.6976356	.43849197
2270	1.769	0.2476086	2.4016746	2520	4.980	0.6972287	.43861831
2275	1.767	0.2472031	2.4023765	2525	4.975	0.6968227	.43874465
2280	1.765	0.2467986	2.4030784	2530	4.971	0.6964175	.43887098
2285	1.764	0.2463952	2.4037803	2535	4.966	0.6960132	.43899732
2290	1.762	0.2459929	2.4044821	2540	4.962	0.6956097	.43912366
2295	1.760	0.2455916	2.4051840	2545	4.957	0.6952071	.43925000
2300	1.759	0.2451914	2.4058859	2550	4.952	0.6948053	.43937633
2305	1.757	0.2447922	2.4065878	2555	4.948	0.6944042	.43950267
2310	1.755	0.2443938	2.4072896	2560	4.943	0.6940041	.43962901
2315	1.754	0.2439966	2.4479915	2565	4.939	0.6936047	.43975535
2320	1.752	0.2436003	2.4486934	2570	4.934	0.6932062	.43988168
2325	1.751	0.2432051	2.4093953	2575	4.930	0.6928084	.44000802
2330	1.749	0.2428108	2.4100971	2580	4.925	0.6924116	.44013436
2335	1.748	0.2424175	2.4107990	2585	4.921	0.6920155	.44026070
2340	1.746	0.2420252	2.4115009	2590	4.916	0.6916203	.44038703
2345	1.744	0.2416338	2.4122028	2595	4.912	0.6912259	.44051337
2350	1.743	0.2412436	2.4129046	2600	4.907	0.6908323	.44063971
2355	1.741	0.2408542	2.4136065	2605	4.903	0.6904395	.44076605
2360	1.740	0.2404657	2.4143084	2610	4.898	0.6900474	.44089238
2365	1.738	0.2400783	2.4150103	2615	4.894	0.6896562	.44101872
2370	1.737	0.2396918	2.4157121	2620	4.890	0.6892658	.44114506
2375	1.735	0.2393063	2.4164140	2625	4.885	0.6888761	.44127140
2380	1.733	0.2389218	2.4171159	2630	4.881	0.6884873	.44139773
2385	1.732	0.2385382	2.4178178	2635	4.876	0.6880992	.44152407
2390	1.730	0.2381554	2.4185196	2640	4.872	0.6877120	.44165041
2395	1.729	0.2377736	2.4192215	2645	4.868	0.6873254	.44177675
2400	1.727	0.2373929	2.4199234	2650	4.863	0.6869397	.44190308
2405	1.726	0.2370130	2.4206253	2655	4.859	0.6865547	.44202942
2410	1.724	0.2366341	2.4213271	2660	4.855	0.6861704	.44215576
2415	1.723	0.2362560	2.4220290	2665	4.851	0.6857869	.44228210
2420	1.721	0.2358789	2.4227309	2670	4.846	0.6854043	.44240843
2425	1.720	0.2355027	2.4234328	2675	4.842	0.6850225	.44253477
2430	1.718	0.2351274	2.4241346	2680	4.838	0.6846413	.44266111
2435	1.717	0.2347530	2.4248365	2685	4.833	0.6842609	.44278745
2440	1.715	0.2343796	2.4255384	2690	4.829	0.6838812	.44291378
2445	1.714	0.2340070	2.4262403	2695	4.825	0.6835023	.44304012
2450	1.713	0.2336353	2.4269421	2700	4.821	0.6831241	.44316646

Sine of Inclina- tion (1 over)	$n = \cdot 010$			$n = \cdot 011$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	4.636	0.6661076	48552880	4.803	0.6337998	53408168	2455
2460	4.631	0.6656923	48566918	4.299	0.6333866	53423609	2460
2465	4.627	0.6652780	48580955	4.295	0.6329743	53439051	2465
2470	4.622	0.6648645	48594993	4.291	0.6325628	53454492	2470
2475	4.618	0.6644519	48609030	4.287	0.6321523	53469933	2475
2480	4.614	0.6640402	48623068	4.283	0.6317426	53485374	2480
2485	4.609	0.6636293	48637105	4.279	0.6313338	53500816	2485
2490	4.605	0.6632198	48651143	4.275	0.6309259	53516257	2490
2495	4.601	0.6628103	48665180	4.271	0.6305188	53531698	2495
2500	4.596	0.6624021	48679218	4.267	0.6301127	53547139	2500
2505	4.592	0.6619948	48693255	4.263	0.6297074	53562581	2505
2510	4.588	0.6615883	48707293	4.259	0.6293030	53578022	2510
2515	4.583	0.6611827	48721330	4.255	0.6288995	53593463	2515
2520	4.579	0.6607779	48735368	4.251	0.6284967	53608904	2520
2525	4.575	0.6603740	48749405	4.247	0.6280949	53624346	2525
2530	4.571	0.6599710	48763443	4.243	0.6276939	53639787	2530
2535	4.566	0.6595688	48777480	4.239	0.6272937	53655228	2535
2540	4.562	0.6591674	48791518	4.235	0.6268944	53670669	2540
2545	4.558	0.6587669	48805555	4.232	0.6264959	53686111	2545
2550	4.554	0.6583672	48819593	4.228	0.6260983	53701552	2550
2555	4.550	0.6579683	48833630	4.224	0.6257014	53716993	2555
2560	4.545	0.6575704	48847668	4.220	0.6253055	53732434	2560
2565	4.541	0.6571732	48861705	4.216	0.6249103	53747876	2565
2570	4.537	0.6567768	48875743	4.212	0.6245159	53763317	2570
2575	4.533	0.6563812	48889780	4.208	0.6241224	53778758	2575
2580	4.529	0.6559865	48903818	4.205	0.6237297	53794199	2580
2585	4.525	0.6555925	48917855	4.201	0.6233380	53809641	2585
2590	4.521	0.6551994	48931893	4.197	0.6229469	53825082	2590
2595	4.517	0.6548071	48945930	4.193	0.6225566	53840523	2595
2600	4.512	0.6544156	48959968	4.190	0.6221672	53855964	2600
2605	4.508	0.6540249	48974005	4.186	0.6217785	53871406	2605
2610	4.504	0.6536350	48988043	4.182	0.6213906	53886847	2610
2615	4.500	0.6532459	49002080	4.178	0.6210036	53902288	2615
2620	4.496	0.6528576	49016118	4.175	0.6206173	53917729	2620
2625	4.492	0.6524701	49030155	4.171	0.6202318	53933171	2625
2630	4.488	0.6520884	49044193	4.167	0.6198471	53948612	2630
2635	4.484	0.6516975	49058230	4.164	0.6194633	53964053	2635
2640	4.480	0.6513124	49072268	4.160	0.6190802	53979494	2640
2645	4.476	0.6509279	49086305	4.156	0.6186978	53994936	2645
2650	4.472	0.6505443	49100343	4.153	0.6183162	54010377	2650
2655	4.468	0.6501614	49114380	4.149	0.6179354	54025818	2655
2660	4.465	0.6497793	49128418	4.145	0.6175553	54041259	2660
2665	4.461	0.6493980	49142455	4.142	0.6171759	54056701	2665
2670	4.457	0.6490174	49156493	4.138	0.6167974	54072142	2670
2675	4.453	0.6486377	49170530	4.134	0.6164198	54087583	2675
2680	4.449	0.6482587	49184568	4.131	0.6160428	54103024	2680
2685	4.445	0.6478804	49198605	4.127	0.6156666	54118466	2685
2690	4.441	0.6475029	49212643	4.124	0.6152911	54133907	2690
2695	4.437	0.6471260	49226680	4.120	0.6149164	54149348	2695
2700	4.434	0.6467500	49240718	4.117	0.6145424	54164789	2700

Sine of Inclina- tion (1 over)	n = .012			n = .013			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	4.026	0.6049098	.58268456	8.792	0.5788677	.68118744	2455
2460	4.028	0.6044986	.58280801	8.788	0.5784588	.68186993	2460
2465	4.019	0.6040882	.58297146	8.785	0.5780498	.68155242	2465
2470	4.015	0.6036788	.58313991	8.781	0.5776423	.68178490	2470
2475	4.011	0.6032701	.58330836	8.778	0.5772356	.68191739	2475
2480	4.007	0.6028625	.58347681	8.774	0.5768298	.68209988	2480
2485	4.004	0.6024556	.58364526	8.771	0.5764248	.68228237	2485
2490	4.000	0.6020497	.58381371	8.767	0.5760208	.68246485	2490
2495	3.996	0.6016446	.58398216	8.764	0.5756176	.68264734	2495
2500	3.992	0.6012405	.58415061	8.760	0.5752158	.68282983	2500
2505	3.989	0.6008372	.58431906	8.757	0.5748188	.68301232	2505
2510	3.985	0.6004347	.58448751	8.753	0.5744132	.68319480	2510
2515	3.981	0.6000331	.58465596	8.750	0.5740136	.68337729	2515
2520	3.978	0.5996323	.58482441	8.746	0.5736147	.68355978	2520
2525	3.974	0.5992324	.58499286	8.743	0.5732167	.68374227	2525
2530	3.970	0.5988334	.58516131	8.740	0.5728195	.68392475	2530
2535	3.967	0.5984358	.58532976	8.736	0.5724230	.68410724	2535
2540	3.963	0.5980379	.58549821	8.733	0.5720277	.68428973	2540
2545	3.960	0.5976414	.58566666	8.729	0.5716331	.68447222	2545
2550	3.956	0.5972457	.58583511	8.726	0.5712393	.68465470	2550
2555	3.952	0.5968508	.58600356	8.723	0.5708464	.68483719	2555
2560	3.949	0.5964568	.58617201	8.719	0.5704543	.68501968	2560
2565	3.945	0.5960636	.58634046	8.716	0.5700630	.68520217	2565
2570	3.942	0.5956712	.58650891	8.713	0.5696724	.68538465	2570
2575	3.938	0.5952796	.58667736	8.709	0.5692827	.68556714	2575
2580	3.934	0.5948889	.58684581	8.706	0.5688939	.68574963	2580
2585	3.931	0.5944990	.58701426	8.703	0.5685059	.68593212	2585
2590	3.927	0.5941099	.58718271	8.700	0.5681187	.68611460	2590
2595	3.924	0.5937217	.58735116	8.696	0.5677323	.68629709	2595
2600	3.920	0.5933343	.58751961	8.693	0.5673467	.68647958	2600
2605	3.917	0.5929476	.58768806	8.689	0.5669619	.68666207	2605
2610	3.913	0.5925616	.58785651	8.686	0.5665778	.68684455	2610
2615	3.910	0.5921765	.58802496	8.683	0.5661945	.68702704	2615
2620	3.907	0.5917921	.58819341	8.680	0.5658121	.68720953	2620
2625	3.903	0.5914085	.58836186	8.676	0.5654305	.68739202	2625
2630	3.900	0.5910258	.58853031	8.673	0.5650497	.68757450	2630
2635	3.896	0.5906439	.58869876	8.670	0.5646697	.68775699	2635
2640	3.893	0.5902628	.58886721	8.667	0.5642904	.68793948	2640
2645	3.889	0.5898824	.58903566	8.664	0.5639118	.68812197	2645
2650	3.886	0.5895028	.58920411	8.660	0.5635341	.68830445	2650
2655	3.883	0.5891239	.58937256	8.657	0.5631570	.68848694	2655
2660	3.879	0.5887457	.58954101	8.654	0.5627808	.68866943	2660
2665	3.876	0.5883664	.58970946	8.651	0.5624054	.68885192	2665
2670	3.873	0.5879919	.58987791	8.648	0.5620307	.68903440	2670
2675	3.869	0.5876161	.59004636	8.644	0.5616568	.68921689	2675
2680	3.866	0.5872411	.59021481	8.642	0.5612836	.68939938	2680
2685	3.862	0.5868668	.59038326	8.638	0.5609118	.68958187	2685
2690	3.859	0.5864933	.59055171	8.635	0.5605396	.68976435	2690
2695	3.856	0.5861205	.59072016	8.632	0.5601687	.68994684	2695
2700	3.853	0.5857485	.59088861	8.629	0.5597985	.64012933	2700

Sine of Inclination (1 over)	$n = .014$			$n = .015$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
2455	8·591	0·5552818	·67974082	8·417	0·5886514	·72829820	2455
2460	8·588	0·5548288	·67998685	8·414	0·5882456	·72850876	2460
2465	8·584	0·5544171	·68018387	8·411	0·5878407	·72871488	2465
2470	8·581	0·5540114	·68038990	8·408	0·5874367	·72892489	2470
2475	8·578	0·5536066	·68058642	8·404	0·5870336	·72913545	2475
2480	8·574	0·5532026	·68078295	8·401	0·5866318	·72934601	2480
2485	8·571	0·5527994	·68097947	8·398	0·5862299	·72955658	2485
2490	8·568	0·5523971	·68117600	8·395	0·5858294	·72976714	2490
2495	8·564	0·5519957	·68137252	8·392	0·5854298	·72997770	2495
2500	8·561	0·5515958	·68156905	8·389	0·5850311	·78018826	2500
2505	8·558	0·5511956	·68176557	8·386	0·5296331	·78039888	2505
2510	8·555	0·5507969	·68196210	8·382	0·5292361	·78060989	2510
2515	8·551	0·5503990	·68209862	8·379	0·5288400	·78081995	2515
2520	8·548	0·5500020	·68229515	8·376	0·5284447	·78103051	2520
2525	8·545	0·5496058	·68249167	8·373	0·5280508	·78124108	2525
2530	8·542	0·5492104	·68268820	8·370	0·5276566	·78145164	2530
2535	8·538	0·5488159	·68288472	8·367	0·5272639	·78166220	2535
2540	8·535	0·5484222	·68308125	8·364	0·5268719	·78187276	2540
2545	8·532	0·5480294	·68327777	8·361	0·5264809	·78208333	2545
2550	8·529	0·5476374	·68347430	8·358	0·5260906	·78229389	2550
2555	8·526	0·5472462	·68367082	8·355	0·5257012	·78250445	2555
2560	8·523	0·5468559	·68386735	8·352	0·5253126	·78271501	2560
2565	8·519	0·5464664	·68406387	8·349	0·5249249	·78292558	2565
2570	8·516	0·5460778	·68426040	8·346	0·5245379	·78313614	2570
2575	8·513	0·5456899	·68445692	8·343	0·5241518	·78334670	2575
2580	8·510	0·5453029	·68465345	8·340	0·5237665	·78355726	2580
2585	8·507	0·5449167	·68484997	8·337	0·5233820	·78376783	2585
2590	8·504	0·5445312	·68504650	8·334	0·5229984	·78397839	2590
2595	8·501	0·5441466	·68524302	8·331	0·5226155	·78418895	2595
2600	8·498	0·5437628	·68543955	8·328	0·5222334	·78439951	2600
2605	8·494	0·5433798	·68563607	8·325	0·5218522	·78461008	2605
2610	8·491	0·5429975	·68583260	8·322	0·5214717	·78482064	2610
2615	8·488	0·5426161	·68602912	8·320	0·5210920	·78503120	2615
2620	8·485	0·5422355	·68622565	8·317	0·5207181	·78524176	2620
2625	8·482	0·5418557	·68642217	8·314	0·52033850	·78545238	2625
2630	8·479	0·5414767	·68661870	8·311	0·5199576	·78566289	2630
2635	8·476	0·5410984	·68681522	8·308	0·5195811	·78587345	2635
2640	8·473	0·5407210	·68701175	8·305	0·5192054	·78608401	2640
2645	8·470	0·5403442	·68720827	8·302	0·5188304	·78629458	2645
2650	8·467	0·5399683	·68740480	8·300	0·5184562	·78650514	2650
2655	8·464	0·5395981	·68760132	8·297	0·5180827	·78671570	2655
2660	8·461	0·5392186	·68779785	8·294	0·5177100	·78692626	2660
2665	8·458	0·5388450	·68799437	8·291	0·5173381	·78713688	2665
2670	8·455	0·5384721	·68819090	8·288	0·5169670	·78734739	2670
2675	8·452	0·5381001	·68838742	8·285	0·5165967	·78755795	2675
2680	8·449	0·5377287	·68858395	8·283	0·5162271	·78776851	2680
2685	8·446	0·5373582	·68878047	8·280	0·5158582	·78797908	2685
2690	8·443	0·5369888	·68897700	8·277	0·5154901	·78818964	2690
2695	8·440	0·5366191	·68917352	8·274	0·5151227	·78840020	2695
2700	8·438	0·5362507	·68937005	8·272	0·5147560	·78861076	2700

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	8-180	0-4955900	82589896	2-808	0-4488611	97106760	2455
2460	8-127	0-4951876	82563760	2-805	0-4479681	97138885	2460
2465	8-125	0-4947860	82587624	2-808	0-4475660	97161910	2465
2470	8-122	0-4943853	82611487	2-800	0-4471698	97189985	2470
2475	8-119	0-4939855	82635351	2-798	0-4467745	97218060	2475
2480	8-116	0-4935865	82659215	2-795	0-4463800	97246135	2480
2485	8-113	0-4931888	82683079	2-792	0-4459865	97274210	2485
2490	8-110	0-4927911	82706942	2-790	0-4455938	97302285	2490
2495	8-107	0-4923948	82730806	2-787	0-4452019	97330360	2495
2500	8-105	0-4919994	82754670	2-785	0-4448110	97358435	2500
2505	8-102	0-4916047	82778534	2-782	0-4444209	97386510	2505
2510	8-099	0-4912110	82802397	2-780	0-4440316	97414585	2510
2515	8-096	0-4908182	82826261	2-777	0-4436433	97442660	2515
2520	8-093	0-4904261	82850125	2-775	0-4432558	97470735	2520
2525	8-091	0-4900350	82873989	2-772	0-4428692	97498810	2525
2530	8-088	0-4896446	82897852	2-770	0-4424833	97526885	2530
2535	8-085	0-4892552	82921716	2-768	0-4420980	97554960	2535
2540	8-082	0-4888665	82945580	2-765	0-4417142	97583035	2540
2545	8-079	0-4884787	82969444	2-763	0-4413309	97611110	2545
2550	8-077	0-4880918	82993307	2-760	0-4409485	97639185	2550
2555	8-074	0-4877057	83017171	2-758	0-4405669	97667260	2555
2560	8-071	0-4873204	83041035	2-755	0-4401861	97695335	2560
2565	8-069	0-4869360	83064899	2-753	0-4398061	97723410	2565
2570	8-066	0-4865523	83088762	2-751	0-4394269	97751485	2570
2575	8-063	0-4861694	83112626	2-748	0-4390485	97779560	2575
2580	8-060	0-4857874	83136490	2-746	0-4386711	97807635	2580
2585	8-058	0-4854062	83160354	2-743	0-4382944	97835710	2585
2590	8-055	0-4850258	83184217	2-741	0-4379185	97863785	2590
2595	8-052	0-4846462	83208081	2-739	0-4375434	97891860	2595
2600	8-050	0-4842674	83231945	2-736	0-4371690	97919935	2600
2605	8-047	0-4838894	83255809	2-734	0-4367955	97948010	2605
2610	8-044	0-4835122	83279672	2-732	0-4364229	97976085	2610
2615	8-042	0-4831358	83303536	2-729	0-4360510	98004160	2615
2620	8-039	0-4827602	83327400	2-727	0-4356798	98032235	2620
2625	8-037	0-4823854	83351264	2-725	0-4353095	98060310	2625
2630	8-034	0-4820114	83375127	2-722	0-4349400	98088385	2630
2635	8-031	0-4816381	83398991	2-720	0-4345713	98116460	2635
2640	8-029	0-4812657	83422855	2-718	0-4342033	98144535	2640
2645	8-027	0-4808940	83446719	2-715	0-4338361	98172610	2645
2650	8-024	0-4805230	83470582	2-713	0-4334696	98200685	2650
2655	8-021	0-4801528	83494446	2-711	0-4331038	98228760	2655
2660	8-018	0-4797835	83518310	2-709	0-4327389	98256835	2660
2665	8-016	0-4794148	83542174	2-706	0-4323747	98284910	2665
2670	8-013	0-4790470	83566037	2-704	0-4320114	98312985	2670
2675	8-011	0-4786799	83589901	2-702	0-4316488	98341060	2675
2680	8-008	0-4783135	83613765	2-700	0-4312869	98369135	2680
2685	8-006	0-4779479	83637629	2-697	0-4309258	98397210	2685
2690	8-003	0-4775831	83661492	2-695	0-4305654	98425285	2690
2695	8-001	0-4772190	83685356	2-693	0-4302057	98453360	2695
2700	2-998	0-4768556	83709220	2-691	0-4298468	98481435	2700

Sine of Inclina- tion (1 over)	$n = \cdot 0225$			$n = \cdot 0250$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	2·605	0·4157582	1·0924898	2·442	0·8877807	1·2188220	2455
2460	2·602	0·4158586	1·0927556	2·440	0·8878891	1·2141729	2460
2465	2·600	0·4149649	1·0930715	2·438	0·8869988	1·2145239	2465
2470	2·598	0·4145722	1·0938873	2·436	0·8866091	1·2148748	2470
2475	2·595	0·4141803	1·0937032	2·433	0·8862204	1·2152258	2475
2480	2·593	0·4137892	1·0940190	2·431	0·8858325	1·2155767	2480
2485	2·591	0·4133990	1·0943849	2·429	0·8854454	1·2159276	2485
2490	2·588	0·4130097	1·0946507	2·427	0·8850598	1·2162786	2490
2495	2·586	0·4126218	1·0949666	2·425	0·8846740	1·2166295	2495
2500	2·584	0·4122338	1·0952824	2·423	0·8842896	1·2169804	2500
2505	2·581	0·4118471	1·0955982	2·421	0·8839061	1·2173314	2505
2510	2·579	0·4114618	1·0959141	2·418	0·8835284	1·2176823	2510
2515	2·577	0·4110763	1·0962300	2·416	0·8831416	1·2180333	2515
2520	2·574	0·4106922	1·0965458	2·414	0·8827606	1·2183842	2520
2525	2·572	0·4103090	1·0968616	2·412	0·8823805	1·2187351	2525
2530	2·570	0·4099266	1·0971775	2·410	0·8820012	1·2190861	2530
2535	2·568	0·4095450	1·0974933	2·408	0·8816228	1·2194370	2535
2540	2·565	0·4091643	1·0978091	2·406	0·8812452	1·2197879	2540
2545	2·563	0·4087845	1·0981260	2·404	0·8808684	1·2201389	2545
2550	2·561	0·4084054	1·0984408	2·402	0·8804925	1·2204898	2550
2555	2·559	0·4080271	1·0987567	2·399	0·8801174	1·2208408	2555
2560	2·557	0·4076498	1·0990725	2·397	0·8797432	1·2211917	2560
2565	2·554	0·4072732	1·0993888	2·395	0·8793697	1·2215426	2565
2570	2·552	0·4068974	1·0997042	2·393	0·8789970	1·2218936	2570
2575	2·550	0·4065224	1·1000200	2·391	0·8786252	1·2222445	2575
2580	2·548	0·4061483	1·1003359	2·389	0·8782542	1·2225954	2580
2585	2·546	0·4057750	1·1006517	2·387	0·8778840	1·2229464	2585
2590	2·543	0·4054025	1·1009676	2·385	0·8775147	1·2232973	2590
2595	2·541	0·4050308	1·1012834	2·383	0·8771461	1·2236483	2595
2600	2·539	0·4046599	1·1015998	2·381	0·8767788	1·2239992	2600
2605	2·537	0·4042898	1·1019151	2·379	0·8764113	1·2243501	2605
2610	2·535	0·4039205	1·1022310	2·377	0·8760451	1·2247011	2610
2615	2·533	0·4035520	1·1025468	2·375	0·8756797	1·2250520	2615
2620	2·530	0·4031842	1·1028626	2·373	0·8753151	1·2254029	2620
2625	2·528	0·4028178	1·1031785	2·371	0·8749513	1·2257539	2625
2630	2·526	0·4024512	1·1034943	2·369	0·8745888	1·2261048	2630
2635	2·524	0·4020858	1·1038102	2·367	0·8742261	1·2264558	2635
2640	2·522	0·4017213	1·1041260	2·365	0·8738646	1·2268067	2640
2645	2·520	0·4013574	1·1044419	2·363	0·8735039	1·2271576	2645
2650	2·518	0·4009944	1·1047577	2·361	0·8731440	1·2275086	2650
2655	2·516	0·4006320	1·1050736	2·359	0·8727847	1·2278595	2655
2660	2·513	0·4002704	1·1053894	2·357	0·8724263	1·2282104	2660
2665	2·511	0·3999096	1·1057052	2·355	0·8720686	1·2285614	2665
2670	2·509	0·3995497	1·1060211	2·353	0·8717117	1·2289123	2670
2675	2·507	0·3991905	1·1063369	2·352	0·8713557	1·2292633	2675
2680	2·505	0·3988320	1·1066528	2·350	0·8710003	1·2296142	2680
2685	2·503	0·3984743	1·1069686	2·348	0·8706457	1·2299651	2685
2690	2·501	0·3981173	1·1072845	2·346	0·8702918	1·2303161	2690
2695	2·499	0·3977610	1·1076003	2·344	0·8699386	1·2306670	2695
2700	2·497	0·3974055	1·1079161	2·342	0·8695862	1·2310179	2700

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	2·809	0·8634738	1·8852042	2·198	0·8421233	1·4565864	2455
2460	2·807	0·8630848	1·8855902	2·197	0·8417874	1·4570075	2460
2465	2·805	0·8626972	1·8859763	2·195	0·8413525	1·4574287	2465
2470	2·803	0·8623104	1·8863623	2·193	0·8409684	1·4578498	2470
2475	2·801	0·8619246	1·8867483	2·191	0·8405853	1·4582709	2475
2480	2·299	0·8615396	1·8871844	2·189	0·8402030	1·4586920	2480
2485	2·297	0·8611554	1·8875204	2·187	0·8398215	1·4591132	2485
2490	2·295	0·8607722	1·8879064	2·185	0·8394409	1·4595343	2490
2495	2·293	0·8603898	1·8882925	2·183	0·8390612	1·4599554	2495
2500	2·291	0·8600088	1·8886785	2·181	0·8386824	1·4603765	2500
2505	2·289	0·8596279	1·8890646	2·179	0·8383044	1·4607977	2505
2510	2·287	0·8592478	1·8894505	2·177	0·8379273	1·4612188	2510
2515	2·285	0·8588689	1·8898366	2·175	0·8375511	1·4616399	2515
2520	2·283	0·8584908	1·8402266	2·174	0·8371756	1·4620610	2520
2525	2·281	0·8581136	1·8406086	2·172	0·8368011	1·4624822	2525
2530	2·279	0·8577372	1·8409947	2·170	0·8364273	1·4629033	2530
2535	2·277	0·8573617	1·8413807	2·168	0·8360545	1·4633244	2535
2540	2·275	0·8569870	1·8417667	2·166	0·8356824	1·4637455	2540
2545	2·273	0·8566131	1·8421528	2·164	0·8353113	1·4641667	2545
2550	2·271	0·8562401	1·8425388	2·162	0·8349409	1·4645878	2550
2555	2·269	0·8558678	1·8429248	2·161	0·8345714	1·4650089	2555
2560	2·267	0·8554965	1·8433109	2·159	0·8342027	1·4654300	2560
2565	2·265	0·8551259	1·8436969	2·157	0·8338348	1·4658512	2565
2570	2·263	0·8547562	1·8440829	2·155	0·8334677	1·4662723	2570
2575	2·261	0·8543878	1·8444690	2·153	0·8331014	1·4666934	2575
2580	2·260	0·8540192	1·8448550	2·151	0·8327360	1·4671145	2580
2585	2·258	0·8536519	1·8452410	2·150	0·8323714	1·4675357	2585
2590	2·256	0·8532854	1·8456270	2·148	0·8320075	1·4679568	2590
2595	2·254	0·8529197	1·8460131	2·146	0·8316445	1·4683779	2595
2600	2·252	0·8525547	1·8463991	2·144	0·8312823	1·4687990	2600
2605	2·250	0·8521907	1·8467851	2·143	0·8309208	1·4692212	2605
2610	2·248	0·8518273	1·8471712	2·141	0·8305602	1·4696413	2610
2615	2·246	0·8514648	1·8475572	2·139	0·8302003	1·4700624	2615
2620	2·244	0·8511081	1·8479432	2·137	0·8298412	1·4704835	2620
2625	2·243	0·8507421	1·8483293	2·135	0·8294830	1·4709047	2625
2630	2·241	0·8503820	1·8487153	2·134	0·8291255	1·4713258	2630
2635	2·239	0·8500226	1·8491013	2·132	0·8287688	1·4717469	2635
2640	2·237	0·8496640	1·8494874	2·130	0·8284129	1·4721680	2640
2645	2·235	0·8493062	1·8498734	2·128	0·8280577	1·4725892	2645
2650	2·233	0·8489492	1·8502594	2·127	0·8277033	1·4730103	2650
2655	2·231	0·8485928	1·8506455	2·125	0·8273496	1·4734314	2655
2660	2·230	0·8482372	1·8510315	2·123	0·8269966	1·4738525	2660
2665	2·228	0·8478824	1·8514175	2·122	0·8266445	1·4742737	2665
2670	2·226	0·8475284	1·8518035	2·120	0·8262933	1·4746948	2670
2675	2·224	0·8471752	1·8521896	2·118	0·8259427	1·4751159	2675
2680	2·222	0·8468227	1·8525756	2·116	0·8255928	1·4755370	2680
2685	2·221	0·8464710	1·8529616	2·115	0·8252437	1·4759582	2685
2690	2·219	0·8461200	1·8533477	2·113	0·8248953	1·4763793	2690
2695	2·217	0·8457696	1·8537337	2·111	0·8245477	1·4768004	2695
2700	2·215	0·8454201	1·8541197	2·110	0·8242008	1·4772215	2700

Sine of Inclina- tion (1 over)	$n = \cdot 035$			$n = \cdot 050$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2455	2·024	0·8062969	1·6998508	1·711	0·2882645	2·4276440	2455
2460	2·028	0·8059159	1·6998421	1·710	0·2828946	2·4288459	2460
2465	2·021	0·8055358	1·7003834	1·708	0·2825256	2·4290478	2465
2470	2·019	0·8051565	1·7008247	1·707	0·2821575	2·4297496	2470
2475	2·017	0·8047782	1·7018161	1·705	0·2817908	2·4804515	2475
2480	2·016	0·8044007	1·7018074	1·704	0·2814288	2·4811584	2480
2485	2·014	0·8040240	1·7022987	1·702	0·2810588	2·4818558	2485
2490	2·012	0·8036482	1·7027900	1·701	0·2806986	2·4825571	2490
2495	2·010	0·8032733	1·7032813	1·700	0·2803298	2·4832590	2495
2500	2·009	0·8028998	1·7037726	1·698	0·2299670	2·4839609	2500
2505	2·007	0·8025261	1·7042639	1·697	0·2296049	2·4846628	2505
2510	2·005	0·8021538	1·7047552	1·695	0·2292436	2·4853646	2510
2515	2·003	0·8017824	1·7052466	1·694	0·2288838	2·4860665	2515
2520	2·002	0·8014117	1·7057379	1·692	0·2285237	2·4867684	2520
2525	2·000	0·8010420	1·7062292	1·691	0·2281651	2·4874708	2525
2580	1·998	0·8006781	1·7067205	1·690	0·2278072	2·4881721	2580
2585	1·997	0·8008050	1·7072118	1·689	0·2274503	2·4888740	2585
2540	1·995	0·2999377	1·7077081	1·687	0·2270941	2·4895759	2540
2545	1·993	0·2995713	1·7081944	1·686	0·2267388	2·4402778	2545
2550	1·992	0·2992058	1·7086857	1·684	0·2263843	2·4409796	2550
2555	1·990	0·2988410	1·7091771	1·683	0·2260306	2·4416815	2555
2560	1·988	0·2984771	1·7096684	1·681	0·2256777	2·4423834	2560
2565	1·987	0·2981140	1·7101597	1·680	0·2253256	2·4430853	2565
2570	1·985	0·2977517	1·7106510	1·679	0·2249744	2·4437871	2570
2575	1·983	0·2973902	1·7111428	1·677	0·2246239	2·4444890	2575
2580	1·982	0·2970296	1·7116336	1·676	0·2242748	2·4451909	2580
2585	1·980	0·2966697	1·7121249	1·675	0·2239255	2·4458928	2585
2590	1·978	0·2963107	1·7126162	1·673	0·2235775	2·4465946	2590
2595	1·977	0·2959524	1·7131076	1·672	0·2232303	2·4472965	2595
2600	1·975	0·2955949	1·7135989	1·671	0·2228839	2·4479984	2600
2605	1·974	0·2952383	1·7140902	1·669	0·2225383	2·4487003	2605
2610	1·972	0·2948824	1·7145815	1·668	0·2221934	2·4494021	2610
2615	1·970	0·2945278	1·7150728	1·667	0·2218498	2·4501040	2615
2620	1·969	0·2941730	1·7155641	1·665	0·2215060	2·4508059	2620
2625	1·967	0·2938195	1·7160554	1·664	0·2211636	2·4515078	2625
2630	1·965	0·2934668	1·7165467	1·663	0·2208219	2·4522096	2630
2635	1·964	0·2931148	1·7170381	1·661	0·2204810	2·4529115	2635
2640	1·962	0·2927637	1·7175294	1·660	0·2201408	2·4536134	2640
2645	1·961	0·2924133	1·7180207	1·659	0·2198014	2·4543153	2645
2650	1·959	0·2920636	1·7185120	1·658	0·2194628	2·4550171	2650
2655	1·958	0·2917147	1·7190038	1·656	0·2191248	2·4557190	2655
2660	1·956	0·2913666	1·7194946	1·655	0·2187877	2·4564209	2660
2665	1·954	0·2910192	1·7199859	1·654	0·2184513	2·4571228	2665
2670	1·953	0·2906726	1·7204772	1·652	0·2181157	2·4578246	2670
2675	1·951	0·2903268	1·7209686	1·651	0·2177809	2·4585265	2675
2680	1·950	0·2899817	1·7214599	1·650	0·2174467	2·4592284	2680
2685	1·948	0·2896374	1·7219512	1·649	0·2171134	2·4599303	2685
2690	1·947	0·2892938	1·7224425	1·647	0·2167808	2·4606321	2690
2695	1·945	0·2889509	1·7229338	1·646	0·2164488	2·4613340	2695
2700	1·944	0·2886087	1·7234251	1·645	0·2161177	2·4620359	2700

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	4.817	0.6827468	44329280	4.430	0.6463748	49254755	2705
2710	4.812	0.6823701	44341913	4.428	0.6460008	49268793	2710
2715	4.808	0.6819942	44354547	4.422	0.6456264	49282830	2715
2720	4.804	0.6816189	44367181	4.418	0.6452532	49296868	2720
2725	4.800	0.6812445	44379815	4.414	0.6448809	49310905	2725
2730	4.796	0.6808708	44392448	4.411	0.6445094	49324943	2730
2735	4.792	0.6804979	44405082	4.407	0.6441385	49338980	2735
2740	4.788	0.6801253	44417716	4.403	0.6437684	49353018	2740
2745	4.784	0.6797540	44430350	4.399	0.6433989	49367055	2745
2750	4.780	0.6793831	44442983	4.396	0.6430302	49381093	2750
2755	4.775	0.6790129	44455617	4.392	0.6426622	49395130	2755
2760	4.771	0.6786435	44468251	4.388	0.6422949	49409168	2760
2765	4.767	0.6782748	44480885	4.385	0.6419283	49423205	2765
2770	4.763	0.6779068	44493518	4.381	0.6415625	49437243	2770
2775	4.759	0.6775394	44506152	4.377	0.6411972	49451280	2775
2780	4.755	0.6771728	44518786	4.374	0.6408327	49465318	2780
2785	4.751	0.6768069	44531420	4.370	0.6404689	49479355	2785
2790	4.747	0.6764417	44544053	4.366	0.6401059	49493393	2790
2795	4.743	0.6760773	44556687	4.363	0.6397435	49507430	2795
2800	4.739	0.6757135	44569321	4.359	0.6393819	49521468	2800
2805	4.735	0.6753504	44581955	4.355	0.6390209	49535505	2805
2810	4.731	0.6749880	44594588	4.352	0.6386606	49549543	2810
2815	4.727	0.6746262	44607222	4.348	0.6383010	49563580	2815
2820	4.724	0.6742651	44619856	4.345	0.6379420	49577618	2820
2825	4.720	0.6739047	44632490	4.341	0.6375837	49591655	2825
2830	4.716	0.6735451	44645123	4.337	0.6372262	49605693	2830
2835	4.712	0.6731861	44657757	4.334	0.6368693	49619730	2835
2840	4.708	0.6728278	44670391	4.330	0.6365132	49633768	2840
2845	4.704	0.6724701	44683025	4.327	0.6361576	49647805	2845
2850	4.700	0.6721131	44695658	4.323	0.6358027	49661843	2850
2855	4.696	0.6717568	44708292	4.320	0.6354485	49675880	2855
2860	4.692	0.6714010	44720926	4.316	0.6350949	49689918	2860
2865	4.689	0.6710461	44733560	4.313	0.6347421	49703955	2865
2870	4.685	0.6706918	44746193	4.309	0.6343899	49717993	2870
2875	4.681	0.6703381	44758827	4.306	0.6340383	49732030	2875
2880	4.677	0.6699850	44771461	4.302	0.6336874	49746068	2880
2885	4.673	0.6696325	44784095	4.299	0.6333371	49760105	2885
2890	4.670	0.6692807	44796728	4.295	0.6329875	49774143	2890
2895	4.666	0.6689296	44809362	4.292	0.6326385	49788180	2895
2900	4.662	0.6685790	44821996	4.288	0.6322902	49802218	2900
2905	4.658	0.6682291	44834630	4.285	0.6319425	49816255	2905
2910	4.655	0.6678799	44847263	4.281	0.6315955	49830293	2910
2915	4.651	0.6675312	44859897	4.278	0.6312491	49844330	2915
2920	4.647	0.6671833	44872531	4.275	0.6309034	49858368	2920
2925	4.643	0.6668360	44885165	4.271	0.6305583	49872405	2925
2930	4.640	0.6664903	44897798	4.268	0.6302138	49886443	2930
2935	4.636	0.6661443	44910432	4.265	0.6298699	49900480	2935
2940	4.632	0.6657990	44923066	4.261	0.6295266	49914518	2940
2945	4.629	0.6654543	44935700	4.258	0.6291840	49928555	2945
2950	4.625	0.6651102	44948333	4.254	0.6288421	49942593	2950

Sine of Inclination (1 over)	$n = \cdot 011$			$n = \cdot 012$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
2705	4·113	0·6141691	·54180231	3·849	0·5853773	·59105706	2705
2710	4·110	0·6137966	·54195672	3·846	0·5850067	·59122551	2710
2715	4·106	0·6134249	·54211113	3·843	0·5846368	·59139396	2715
2720	4·103	0·6130537	·54226554	3·839	0·5842676	·59156241	2720
2725	4·099	0·6126834	·54241996	3·836	0·5838998	·59173086	2725
2730	4·096	0·6123139	·54257437	3·833	0·5835318	·59189931	2730
2735	4·092	0·6119451	·54272878	3·830	0·5831649	·59206776	2735
2740	4·089	0·6115770	·54288319	3·826	0·5827987	·59223621	2740
2745	4·085	0·6112095	·54303761	3·823	0·5824332	·59240466	2745
2750	4·082	0·6108428	·54319202	3·820	0·5820685	·59257311	2750
2755	4·078	0·6104768	·54334643	3·817	0·5817044	·59274156	2755
2760	4·075	0·6101116	·54350084	3·814	0·5813411	·59291001	2760
2765	4·071	0·6097471	·54365526	3·810	0·5809785	·59307846	2765
2770	4·068	0·6093833	·54380967	3·807	0·5806167	·59324691	2770
2775	4·065	0·6090200	·54396408	3·804	0·5802554	·59341536	2775
2780	4·061	0·6086575	·54411849	3·801	0·5798949	·59358381	2780
2785	4·058	0·6082958	·54427291	3·798	0·5795352	·59375226	2785
2790	4·054	0·6079349	·54442732	3·795	0·5791761	·59392071	2790
2795	4·051	0·6075745	·54458173	3·792	0·5788177	·59408916	2795
2800	4·048	0·6072149	·54473614	3·788	0·5784600	·59425761	2800
2805	4·044	0·6068559	·54489056	3·785	0·5781030	·59442606	2805
2810	4·041	0·6064977	·54504497	3·782	0·5777467	·59459451	2810
2815	4·038	0·6061401	·54519938	3·779	0·5773910	·59476296	2815
2820	4·034	0·6057832	·54535379	3·776	0·5770360	·59493141	2820
2825	4·031	0·6054269	·54550821	3·773	0·5766817	·59509986	2825
2830	4·028	0·6050714	·54566262	3·770	0·5763282	·59526831	2830
2835	4·025	0·6047166	·54581703	3·767	0·5759753	·59543676	2835
2840	4·021	0·6043625	·54597144	3·764	0·5756231	·59560521	2840
2845	4·018	0·6040089	·54612586	3·761	0·5752715	·59577366	2845
2850	4·015	0·6036560	·54628027	3·758	0·5749206	·59594211	2850
2855	4·011	0·6033038	·54643468	3·755	0·5745703	·59611056	2855
2860	4·008	0·6029523	·54658909	3·752	0·5742208	·59627901	2860
2865	4·005	0·6026015	·54674351	3·749	0·5738719	·59644746	2865
2870	4·002	0·6022513	·54689792	3·746	0·5735237	·59661591	2870
2875	3·999	0·6019017	·54705233	3·743	0·5731761	·59678436	2875
2880	3·995	0·6015528	·54720674	3·740	0·5728291	·59695281	2880
2885	3·992	0·6012045	·54736116	3·737	0·5724828	·59712126	2885
2890	3·989	0·6008569	·54751557	3·734	0·5721372	·59728971	2890
2895	3·986	0·6005101	·54766998	3·731	0·5717923	·59745816	2895
2900	3·983	0·6001638	·54782439	3·728	0·5714479	·59762661	2900
2905	3·979	0·5998182	·54797881	3·725	0·5711041	·59779506	2905
2910	3·976	0·5994731	·54813322	3·722	0·5707610	·59796351	2910
2915	3·973	0·5991286	·54828763	3·719	0·5704186	·59813196	2915
2920	3·970	0·5987849	·54844204	3·716	0·5700768	·59830041	2920
2925	3·967	0·5984419	·54859646	3·713	0·5697357	·59846886	2925
2930	3·964	0·5980995	·54875087	3·710	0·5693952	·59863731	2930
2935	3·961	0·5977576	·54890528	3·707	0·5690552	·59880576	2935
2940	3·957	0·5974164	·54905969	3·704	0·5687160	·59897421	2940
2945	3·954	0·5970760	·54921411	3·701	0·5683773	·59914266	2945
2950	3·951	0·5967360	·54936852	3·699	0·5680394	·59931111	2950

Sine of Inclina- tion (1 over)	n = .013			n = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	8·626	0·5594292	·64081182	8·485	0·5858882	·68956657	2705
2710	8·628	0·5590805	·64049480	8·482	0·5855168	·68976810	2710
2715	8·620	0·5586925	·64067879	8·429	0·5851501	·68995962	2715
2720	8·617	0·5588252	·64085928	8·426	0·5847847	·69015615	2720
2725	8·614	0·5579587	·64104177	8·428	0·5844200	·69085287	2725
2780	8·611	0·5575980	·64122425	8·420	0·5840561	·69054920	2780
2785	8·608	0·5572281	·64140674	8·417	0·5836929	·69074572	2785
2740	8·605	0·5568688	·64158928	8·415	0·5838804	·69094225	2740
2745	8·602	0·5565002	·64177172	8·412	0·5829686	·69113877	2745
2750	8·599	0·5561873	·64195420	8·409	0·5826075	·69133580	2750
2755	8·596	0·5557751	·64213669	8·406	0·5822471	·69153182	2755
2760	8·598	0·5554187	·64231918	8·408	0·5818875	·69172885	2760
2765	8·590	0·5550580	·64250167	8·400	0·5815286	·69192487	2765
2770	8·587	0·5546980	·64268415	8·398	0·5811704	·69212140	2770
2775	8·584	0·5543386	·64286664	8·395	0·5808128	·69231792	2775
2780	8·581	0·5539750	·64304918	8·392	0·5804560	·69251445	2780
2785	8·578	0·5536171	·64323162	8·389	0·5800999	·69271097	2785
2790	8·575	0·5532598	·64341410	8·386	0·5297444	·69290750	2790
2795	8·572	0·5529038	·64359659	8·384	0·5293897	·69310402	2795
2800	8·569	0·5525475	·64377908	8·381	0·5290357	·69330055	2800
2805	8·566	0·5521924	·64396157	8·378	0·5286824	·69349707	2805
2810	8·568	0·5518880	·64414405	8·375	0·5283298	·69369360	2810
2815	8·560	0·5514842	·64432654	8·373	0·5279777	·69389012	2815
2820	8·557	0·5511810	·64450903	8·370	0·5276264	·69408665	2820
2825	8·554	0·5507785	·64469152	8·367	0·5272758	·69428317	2825
2830	8·552	0·5504269	·64487400	8·365	0·5269260	·69447970	2830
2835	8·549	0·5500759	·64505649	8·362	0·5265767	·69467622	2835
2840	8·546	0·5497256	·64523898	8·359	0·5262281	·69487275	2840
2845	8·543	0·5493758	·64542147	8·356	0·5258802	·69506927	2845
2850	8·540	0·5490268	·64560395	8·354	0·5255329	·69526580	2850
2855	8·537	0·5486785	·64578644	8·351	0·5251864	·69546232	2855
2860	8·535	0·5483307	·64596893	8·348	0·5248404	·69565885	2860
2865	8·532	0·5479836	·64615142	8·346	0·5244952	·69585537	2865
2870	8·529	0·5476373	·64633390	8·343	0·5241506	·69605190	2870
2875	8·526	0·5472915	·64651639	8·340	0·5238067	·69624842	2875
2880	8·523	0·5469465	·64669888	8·338	0·5234634	·69644495	2880
2885	8·520	0·5466021	·64678137	8·335	0·5231207	·69664147	2885
2890	8·518	0·5462588	·64696385	8·333	0·5227787	·69683800	2890
2895	8·515	0·5459152	·64714634	8·330	0·5224375	·69703452	2895
2900	8·512	0·5455726	·64732883	8·327	0·5220967	·69723105	2900
2905	8·509	0·5452307	·64751132	8·325	0·5217566	·69742757	2905
2910	8·507	0·5448896	·64769380	8·322	0·5214173	·69762410	2910
2915	8·504	0·5445490	·64787629	8·320	0·5210785	·69782062	2915
2920	8·501	0·5442092	·64805878	8·317	0·5207404	·69801715	2920
2925	8·498	0·5438699	·64824127	8·314	0·5204029	·69821367	2925
2930	8·496	0·5435312	·64842375	8·312	0·5200660	·69841020	2930
2935	8·493	0·5431931	·64860624	8·309	0·5197297	·69860672	2935
2940	8·490	0·5428557	·64878873	8·307	0·5193941	·69880325	2940
2945	8·488	0·5425189	·64897122	8·304	0·5190591	·69899977	2945
2950	8·485	0·5421829	·64925370	8·302	0·5187248	·69919680	2950

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	8·269	0·5143902	·73882132	2·996	0·4764930	·88738084	2705
2710	8·266	0·5140250	·73903189	2·993	0·4761811	·88756947	2710
2715	8·263	0·5136606	·73924245	2·991	0·4757700	·88780811	2715
2720	8·261	0·5132968	·73945301	2·988	0·4754095	·88804675	2720
2725	8·258	0·5129339	·73966358	2·986	0·4750498	·88828539	2725
2730	8·255	0·5125717	·73987414	2·983	0·4746909	·88852402	2730
2735	8·252	0·5122103	·74008470	2·981	0·4743327	·88876266	2735
2740	8·250	0·5118495	·74029526	2·978	0·4739752	·88900130	2740
2745	8·247	0·5114895	·74050583	2·976	0·4736184	·88923994	2745
2750	8·244	0·5111301	·74071639	2·973	0·4732623	·88947857	2750
2755	8·242	0·5107715	·74092695	2·971	0·4729069	·88971721	2755
2760	8·239	0·5104136	·74113751	2·969	0·4725528	·88995585	2760
2765	8·236	0·5100564	·74134808	2·966	0·4721984	·84019449	2765
2770	8·234	0·5096999	·74155864	2·964	0·4718452	·84043312	2770
2775	8·231	0·5093440	·74176920	2·961	0·4714926	·84067176	2775
2780	8·228	0·5089889	·74197976	2·959	0·4711408	·84091040	2780
2785	8·226	0·5086346	·74219033	2·957	0·4707896	·84114904	2785
2790	8·223	0·5082809	·74240089	2·954	0·4704392	·84138767	2790
2795	8·221	0·5079279	·74261145	2·952	0·4700895	·84162631	2795
2800	8·218	0·5075756	·74282201	2·949	0·4697404	·84186495	2800
2805	8·215	0·5072240	·74303258	2·947	0·4693921	·84210359	2805
2810	8·213	0·5068731	·74324314	2·945	0·4690444	·84234222	2810
2815	8·210	0·5065228	·74345370	2·942	0·4686974	·84258086	2815
2820	8·208	0·5061732	·74366426	2·940	0·4683510	·84281950	2820
2825	8·205	0·5058243	·74387483	2·938	0·4680054	·84305814	2825
2830	8·202	0·5054761	·74408539	2·935	0·4676605	·84329677	2830
2835	8·200	0·5051286	·74429595	2·933	0·4673162	·84353541	2835
2840	8·197	0·5047818	·74450651	2·931	0·4669727	·84377405	2840
2845	8·195	0·5044356	·74471708	2·928	0·4666297	·84401269	2845
2850	8·192	0·5040901	·74492764	2·926	0·4662874	·84425132	2850
2855	8·190	0·5037452	·74513820	2·924	0·4659459	·84448996	2855
2860	8·187	0·5034010	·74534876	2·921	0·4656050	·84472860	2860
2865	8·185	0·5030574	·74555933	2·919	0·4652647	·84496724	2865
2870	8·182	0·5027146	·74576989	2·917	0·4649251	·84520587	2870
2875	8·180	0·5023724	·74598045	2·915	0·4645861	·84544451	2875
2880	8·177	0·5020308	·74619101	2·912	0·4642478	·84568315	2880
2885	8·175	0·5016899	·74640158	2·910	0·4639101	·84592179	2885
2890	8·172	0·5013496	·74661214	2·908	0·4635731	·84616042	2890
2895	8·170	0·5010101	·74682270	2·906	0·4632368	·84639906	2895
2900	8·167	0·5006710	·74703326	2·903	0·4629010	·84663770	2900
2905	8·165	0·5003327	·74724383	2·901	0·4625658	·84687634	2905
2910	8·162	0·4999950	·74745439	2·899	0·4622314	·84711497	2910
2915	8·160	0·4996580	·74766495	2·897	0·4618976	·84735361	2915
2920	8·157	0·4993216	·74787551	2·894	0·4615645	·84759225	2920
2925	8·155	0·4989859	·74808608	2·892	0·4612320	·84783089	2925
2930	8·152	0·4986507	·74829664	2·890	0·4609000	·84806952	2930
2935	8·150	0·4983161	·74850720	2·888	0·4605687	·84830816	2935
2940	8·148	0·4979822	·74871776	2·886	0·4602381	·84854680	2940
2945	8·145	0·4976489	·74892833	2·883	0·4599080	·84878544	2945
2950	8·143	0·4973163	·74913889	2·881	0·4595787	·84902407	2950

Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	2.688	0.4294888	.98509510	2.495	0.8970507	1.1082820	2705
2710	2.686	0.4291814	.98587585	2.493	0.8966967	1.1085478	2710
2715	2.684	0.4287747	.98665660	2.491	0.8963434	1.1088637	2715
2720	2.682	0.4284186	.98698785	2.489	0.8959908	1.1091795	2720
2725	2.680	0.4280634	.98621810	2.487	0.8956390	1.1094954	2725
2730	2.677	0.4277090	.98649885	2.485	0.8952880	1.1098112	2730
2735	2.675	0.4273558	.98677960	2.483	0.8949376	1.1101271	2735
2740	2.673	0.4270028	.98706035	2.481	0.8945879	1.1104429	2740
2745	2.671	0.4266499	.98734110	2.479	0.8942390	1.1107587	2745
2750	2.669	0.4262988	.98762185	2.477	0.8938908	1.1110746	2750
2755	2.667	0.4259478	.98790260	2.475	0.8935482	1.1113904	2755
2760	2.664	0.4255972	.98818335	2.473	0.8931964	1.1117063	2760
2765	2.662	0.4252478	.98846410	2.471	0.8928508	1.1120221	2765
2770	2.660	0.4248990	.98874485	2.469	0.8925049	1.1123380	2770
2775	2.658	0.4245509	.98902560	2.467	0.8921602	1.1126538	2775
2780	2.656	0.4242035	.98930635	2.465	0.8918162	1.1129696	2780
2785	2.654	0.4238568	.98958710	2.463	0.8914729	1.1132855	2785
2790	2.652	0.4235108	.98986785	2.461	0.8911303	1.1136013	2790
2795	2.650	0.4231656	.99014860	2.459	0.8907884	1.1139172	2795
2800	2.647	0.4228210	.99042935	2.457	0.8904472	1.1142330	2800
2805	2.645	0.4224771	.99071010	2.455	0.8901066	1.1145489	2805
2810	2.643	0.4221339	.99099085	2.453	0.8897668	1.1148647	2810
2815	2.641	0.4217913	.99127160	2.451	0.8894276	1.1151806	2815
2820	2.639	0.4214494	.99155235	2.450	0.8890891	1.1154964	2820
2825	2.637	0.4211083	.99183310	2.448	0.8887512	1.1158122	2825
2830	2.635	0.4207679	.99211385	2.446	0.8884141	1.1161281	2830
2835	2.633	0.4204280	.99239460	2.444	0.8880777	1.1164439	2835
2840	2.631	0.4200889	.99267535	2.442	0.8877420	1.1167598	2840
2845	2.629	0.4197504	.99295610	2.440	0.8874068	1.1170756	2845
2850	2.627	0.4194126	.99323685	2.438	0.8870723	1.1173915	2850
2855	2.625	0.4190755	.99351760	2.436	0.8867386	1.1177073	2855
2860	2.623	0.4187389	.99379835	2.434	0.8864054	1.1180231	2860
2865	2.621	0.4184031	.99407910	2.433	0.8860729	1.1183390	2865
2870	2.619	0.4180679	.99435985	2.431	0.8857411	1.1186548	2870
2875	2.617	0.4177334	.99464060	2.429	0.8854099	1.1189707	2875
2880	2.615	0.4173995	.99492135	2.427	0.8850795	1.1192865	2880
2885	2.613	0.4170663	.99520210	2.425	0.8847496	1.1196024	2885
2890	2.611	0.4167338	.99548285	2.423	0.8844204	1.1199182	2890
2895	2.609	0.4164019	.99576360	2.422	0.8840919	1.1202341	2895
2900	2.607	0.4160705	.99604435	2.420	0.8837639	1.1205499	2900
2905	2.605	0.4157398	.99632510	2.418	0.8834365	1.1208657	2905
2910	2.603	0.4154098	.99660585	2.416	0.8831099	1.1211816	2910
2915	2.601	0.4150804	.99688660	2.414	0.8827839	1.1214974	2915
2920	2.599	0.4147518	.99716735	2.412	0.8824586	1.1218133	2920
2925	2.597	0.4144237	.99744810	2.411	0.8821339	1.1221291	2925
2930	2.595	0.4140962	.99772885	2.409	0.8818097	1.1224450	2930
2935	2.593	0.4137693	.99800960	2.407	0.8814861	1.1227608	2935
2940	2.591	0.4134431	.99829035	2.405	0.8811633	1.1230766	2940
2945	2.589	0.4131175	.99857110	2.403	0.8808411	1.1233925	2945
2950	2.587	0.4127926	.99885185	2.402	0.8805195	1.1237083	2950

Sine of Inclina- tion (1 over)	$n = \cdot 0250$			$n = \cdot 0275$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	2·840	0·8692846	1·2818689	2·218	0·8450714	1·8545058	2705
2710	2·838	0·8688887	1·2817198	2·212	0·8447233	1·8548918	2710
2715	2·836	0·8685885	1·2820708	2·210	0·8448760	1·8552778	2715
2720	2·834	0·8681840	1·2824217	2·208	0·8440293	1·8556639	2720
2725	2·833	0·8678852	1·2827726	2·206	0·8436884	1·8560499	2725
2730	2·831	0·8674873	1·2831286	2·205	0·8433388	1·8564359	2730
2735	2·829	0·8671401	1·2834745	2·203	0·8429940	1·8568220	2735
2740	2·827	0·8667935	1·2838254	2·201	0·8426503	1·8572080	2740
2745	2·825	0·8664476	1·2841764	2·199	0·8423078	1·8575940	2745
2750	2·823	0·8661025	1·2845273	2·198	0·8419650	1·8579800	2750
2755	2·821	0·8657580	1·2848783	2·196	0·8416234	1·8583661	2755
2760	2·820	0·8654144	1·2852292	2·194	0·8412826	1·8587521	2760
2765	2·818	0·8650714	1·2855801	2·193	0·8409425	1·8591381	2765
2770	2·816	0·8647291	1·2859311	2·191	0·8406081	1·8595242	2770
2775	2·814	0·8643874	1·2862820	2·189	0·8402642	1·8599102	2775
2780	2·812	0·8640465	1·2866329	2·187	0·8399262	1·8602962	2780
2785	2·811	0·8637063	1·2869839	2·186	0·8395888	1·8606823	2785
2790	2·809	0·8633668	1·2873348	2·184	0·8392521	1·8610683	2790
2795	2·807	0·8630280	1·2876858	2·182	0·8389162	1·8614543	2795
2800	2·805	0·8626899	1·2880367	2·181	0·8385809	1·8618404	2800
2805	2·803	0·8623525	1·2883876	2·179	0·8382464	1·8622264	2805
2810	2·801	0·8620157	1·2887386	2·177	0·8379125	1·8626124	2810
2815	2·800	0·8616796	1·2890895	2·176	0·8375792	1·8629985	2815
2820	2·298	0·8613442	1·2894404	2·174	0·8372466	1·8633845	2820
2825	2·296	0·8610094	1·2897914	2·172	0·8369147	1·8637705	2825
2830	2·294	0·8606754	1·2401428	2·171	0·8365886	1·8641565	2830
2835	2·293	0·8603421	1·2404938	2·169	0·8362581	1·8645426	2835
2840	2·291	0·8600094	1·2408442	2·167	0·8359233	1·8649286	2840
2845	2·289	0·8596774	1·2411951	2·166	0·8355941	1·8653146	2845
2850	2·287	0·8593460	1·2415461	2·164	0·8352656	1·8657007	2850
2855	2·286	0·8590153	1·2418970	2·162	0·8349377	1·8660867	2855
2860	2·284	0·8586853	1·2422479	2·161	0·8346105	1·8664727	2860
2865	2·282	0·8583559	1·2425989	2·159	0·8342840	1·8668588	2865
2870	2·280	0·8580272	1·2429498	2·158	0·8339581	1·8672448	2870
2875	2·279	0·8576991	1·2433008	2·156	0·8336328	1·8676308	2875
2880	2·277	0·8573717	1·2436517	2·154	0·8333083	1·8680169	2880
2885	2·275	0·8570448	1·2440026	2·152	0·8329843	1·8684029	2885
2890	2·274	0·8567187	1·2443536	2·151	0·8326610	1·8687889	2890
2895	2·272	0·8563933	1·2447045	2·150	0·8323385	1·8691750	2895
2900	2·270	0·8560683	1·2450554	2·148	0·8320164	1·8695610	2900
2905	2·269	0·8557441	1·2454064	2·146	0·8316949	1·8699470	2905
2910	2·267	0·8554206	1·2457573	2·145	0·8313742	1·8703330	2910
2915	2·265	0·8550976	1·2461083	2·143	0·8310541	1·8707191	2915
2920	2·263	0·8547754	1·2464592	2·142	0·8307347	1·8711051	2920
2925	2·262	0·8544537	1·2468101	2·140	0·8304159	1·8714911	2925
2930	2·260	0·8541326	1·2471611	2·138	0·8300977	1·8718772	2930
2935	2·258	0·8538122	1·2475120	2·137	0·8297801	1·8722632	2935
2940	2·257	0·8534924	1·2478629	2·135	0·8294631	1·8726492	2940
2945	2·255	0·8531732	1·2482139	2·134	0·8291467	1·8730353	2945
2950	2·253	0·8528547	1·2485648	2·132	0·8288311	1·8734213	2950

Sine of Inclina- tion (1 over)	n = .030			n = .035			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2705	2.108	0.8288547	1.4776427	1.942	0.2882874	1.7289164	2705
2710	2.108	0.8285098	1.4780688	1.941	0.2879268	1.7244077	2710
2715	2.105	0.8281846	1.4784849	1.939	0.2875868	1.7248991	2715
2720	2.108	0.8228206	1.4789060	1.938	0.2872475	1.7258904	2720
2725	2.101	0.8224774	1.4798272	1.936	0.2869091	1.7258817	2725
2780	2.100	0.8221849	1.4797488	1.935	0.2865714	1.7268780	2780
2785	2.098	0.8217982	1.4801694	1.933	0.2862344	1.7268648	2785
2740	2.096	0.8214521	1.4805905	1.932	0.2858981	1.7278556	2740
2745	2.095	0.8211118	1.4810117	1.930	0.2855625	1.7278469	2745
2750	2.098	0.8207722	1.4814328	1.929	0.2852276	1.7288382	2750
2755	2.091	0.8214882	1.4818539	1.927	0.2848988	1.7288296	2755
2760	2.090	0.8200951	1.4822750	1.926	0.2845599	1.7298209	2760
2765	2.088	0.8197576	1.4826962	1.924	0.2842271	1.7298122	2765
2770	2.087	0.8194208	1.4831173	1.923	0.2838951	1.7808085	2770
2775	2.085	0.8190846	1.4835384	1.921	0.2835687	1.7807948	2775
2780	2.083	0.8187492	1.4839595	1.920	0.2832380	1.7812861	2780
2785	2.082	0.8184145	1.4843807	1.918	0.2829080	1.7817774	2785
2790	2.080	0.8180805	1.4848018	1.917	0.2825788	1.7822687	2790
2795	2.078	0.8177472	1.4852229	1.915	0.2822452	1.7827601	2795
2800	2.077	0.8174146	1.4856440	1.914	0.2819178	1.7832514	2800
2805	2.075	0.8170827	1.4860652	1.912	0.2815900	1.7837427	2805
2810	2.074	0.8167514	1.4864863	1.911	0.2812635	1.7842340	2810
2815	2.072	0.8164208	1.4869074	1.910	0.2809376	1.7847253	2815
2820	2.071	0.8160908	1.4873285	1.908	0.2806123	1.7852166	2820
2825	2.069	0.8157616	1.4877497	1.907	0.2802878	1.7857079	2825
2830	2.067	0.8154331	1.4881708	1.905	0.2799640	1.7861992	2830
2835	2.066	0.8151052	1.4885919	1.904	0.2796409	1.7866906	2835
2840	2.064	0.8147780	1.4890130	1.902	0.2793185	1.7871819	2840
2845	2.063	0.8144514	1.4894342	1.901	0.2789966	1.7876732	2845
2850	2.061	0.8141255	1.4898553	1.900	0.2786754	1.7881645	2850
2855	2.060	0.8138003	1.4902764	1.898	0.2783549	1.7886558	2855
2860	2.058	0.8134757	1.4906975	1.897	0.2780350	1.7891471	2860
2865	2.057	0.8131518	1.4911187	1.895	0.2777158	1.7896384	2865
2870	2.055	0.8128286	1.4915398	1.894	0.2773973	1.7401297	2870
2875	2.054	0.8125060	1.4919609	1.893	0.2770794	1.7406211	2875
2880	2.052	0.8121840	1.4923820	1.891	0.2767622	1.7411124	2880
2885	2.051	0.8118627	1.4928032	1.890	0.2764455	1.7416037	2885
2890	2.049	0.8115420	1.4932243	1.889	0.2761296	1.7420950	2890
2895	2.047	0.8112221	1.4936454	1.887	0.2758143	1.7425863	2895
2900	2.046	0.8109026	1.4940665	1.886	0.2754995	1.7430776	2900
2905	2.044	0.8105838	1.4944877	1.884	0.2751855	1.7435689	2905
2910	2.043	0.8102657	1.4949088	1.883	0.2748721	1.7440602	2910
2915	2.041	0.8099483	1.4953299	1.882	0.2745598	1.7445516	2915
2920	2.040	0.8096315	1.4957510	1.880	0.2742472	1.7450429	2920
2925	2.039	0.8093153	1.4961722	1.879	0.2739357	1.7455342	2925
2930	2.037	0.8089997	1.4965933	1.878	0.2736248	1.7460255	2930
2935	2.036	0.8086847	1.4970144	1.876	0.2733144	1.7465168	2935
2940	2.034	0.8083703	1.4974355	1.875	0.2730048	1.7470081	2940
2945	2.033	0.8080566	1.4978567	1.874	0.2726957	1.7474994	2945
2950	2.031	0.8077436	1.4982778	1.872	0.2723874	1.7479907	2950

Sine of Inclina- tion (1 over)	$n = \cdot 050$			Sine of Inclina- tion (1 over)	$n = \cdot 009$		
	N	log. N	D		N	log. N	D
2705	1.644	0.2157878	2.4627378	2955	4.621	0.6647667	4.4960967
2710	1.642	0.2154576	2.4634396	2960	4.618	0.6644239	4.4978601
2715	1.641	0.2151286	2.4641415	2965	4.614	0.6640817	4.4986235
2720	1.640	0.2148008	2.4648434	2970	4.610	0.6637401	4.4993868
2725	1.639	0.2144728	2.4655453	2975	4.607	0.6633990	4.5011502
2780	1.637	0.2141461	2.4662471	2980	4.603	0.6630586	4.5024186
2785	1.636	0.2138200	2.4669490	2985	4.600	0.6627189	4.5036770
2740	1.635	0.2134946	2.4676509	2990	4.596	0.6623797	4.5049403
2745	1.634	0.2131699	2.4683528	2995	4.592	0.6620412	4.5062037
2750	1.632	0.2128460	2.4690546	3000	4.589	0.6617033	4.5074671
2755	1.631	0.2125227	2.4697565	3010	4.582	0.6610291	4.5099988
2760	1.630	0.2122002	2.4704584	3020	4.575	0.6603574	4.5125208
2765	1.629	0.2118784	2.4711603	3030	4.568	0.6596880	4.5150473
2770	1.628	0.2115572	2.4718621	3040	4.561	0.6590210	4.5175741
2775	1.626	0.2112367	2.4725640	3050	4.554	0.6583564	4.5201008
2780	1.625	0.2109169	2.4732659	3060	4.547	0.6576941	4.5226276
2785	1.624	0.2105979	2.4739678	3070	4.540	0.6570341	4.5251543
2790	1.623	0.2102795	2.4746696	3080	4.533	0.6563764	4.5276811
2795	1.622	0.2099618	2.4753715	3090	4.526	0.6557209	4.5302078
2800	1.620	0.2096448	2.4760734	3100	4.519	0.6550678	4.5327346
2805	1.619	0.2093285	2.4767753	3110	4.512	0.6544168	4.5352613
2810	1.618	0.2090129	2.4774771	3120	4.506	0.6537681	4.5377881
2815	1.617	0.2086979	2.4781790	3130	4.499	0.6531217	4.5403148
2820	1.616	0.2083835	2.4788809	3140	4.492	0.6524776	4.5428416
2825	1.615	0.2080699	2.4795828	3150	4.486	0.6518356	4.5453683
2830	1.613	0.2077570	2.4802846	3160	4.479	0.6511958	4.5478951
2835	1.612	0.2074447	2.4809865	3170	4.473	0.6505581	4.5504218
2840	1.611	0.2071331	2.4816884	3180	4.466	0.6499225	4.5529486
2845	1.610	0.2068221	2.4823903	3190	4.460	0.6492891	4.5554753
2850	1.609	0.2065118	2.4830921	3200	4.453	0.6486579	4.5580021
2855	1.608	0.2062022	2.4837940	3220	4.440	0.6474019	4.5680556
2860	1.607	0.2058931	2.4844959	3240	4.427	0.6461540	4.5681091
2865	1.606	0.2055848	2.4851978	3260	4.415	0.6449145	4.5781626
2870	1.604	0.2052772	2.4858996	3280	4.402	0.6436831	4.5782161
2875	1.603	0.2049701	2.4866015	3300	4.390	0.6424598	4.5882696
2880	1.602	0.2046637	2.4873034	3320	4.378	0.6412445	4.5883231
2885	1.601	0.2043579	2.4880053	3340	4.366	0.6400369	4.5983766
2890	1.600	0.2040528	2.4887071	3360	4.353	0.6388371	4.5984301
2895	1.599	0.2037484	2.4894090	3380	4.342	0.6376450	4.6084836
2900	1.598	0.2034445	2.4901109	3400	4.330	0.6364605	4.6085371
2905	1.596	0.2031412	2.4908128	3420	4.318	0.6352835	4.6185906
2910	1.595	0.2028387	2.4915146	3440	4.306	0.6341139	4.6186441
2915	1.594	0.2025367	2.4922165	3460	4.295	0.6329516	4.6286976
2920	1.593	0.2022354	2.4929184	3480	4.283	0.6317965	4.6287511
2925	1.592	0.2019347	2.4936203	3500	4.272	0.6306486	4.6388046
2930	1.591	0.2016346	2.4943221	3520	4.261	0.6295078	4.6388581
2935	1.590	0.2013351	2.4950240	3540	4.250	0.6283740	4.6489116
2940	1.589	0.2010363	2.4957259	3560	4.239	0.6272470	4.6489651
2945	1.588	0.2007381	2.4964278	3580	4.228	0.6261269	4.6540186
2950	1.587	0.2004406	2.4971296	3600	4.217	0.6250186	4.6690721

Sine of Inclina- tion (1 over)	n = .010			n = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	4.251	0.6285008	.49956680	8.948	0.5968965	.54952298	2955
2960	4.248	0.6281600	.49970668	8.945	0.5960578	.54967784	2960
2965	4.244	0.6278199	.49984705	8.942	0.5957198	.54983176	2965
2970	4.241	0.6274804	.49998748	8.939	0.5953828	.54998617	2970
2975	4.238	0.6271415	.50012780	8.936	0.5950455	.55014058	2975
2980	4.235	0.6268032	.50026818	8.933	0.5947091	.55029499	2980
2985	4.231	0.6264655	.50040855	8.930	0.5943735	.55044941	2985
2990	4.228	0.6261285	.50054893	8.927	0.5940385	.55060382	2990
2995	4.225	0.6257920	.50068930	8.924	0.5937041	.55075823	2995
3000	4.221	0.6254562	.50082968	8.921	0.5933708	.55091264	3000
3010	4.215	0.6247864	.50111048	8.915	0.5927045	.55122147	3010
3020	4.208	0.6241189	.50139118	8.909	0.5920411	.55153029	3020
3030	4.202	0.6234527	.50167198	8.903	0.5913799	.55183912	3030
3040	4.196	0.6227909	.50195268	8.897	0.5907212	.55214794	3040
3050	4.189	0.6221305	.50223348	8.891	0.5900648	.55245677	3050
3060	4.183	0.6214724	.50251418	8.885	0.5894106	.55276559	3060
3070	4.177	0.6208166	.50279498	8.879	0.5887589	.55307442	3070
3080	4.170	0.6201631	.50307568	8.874	0.5881096	.55338324	3080
3090	4.164	0.6195119	.50335643	8.868	0.5874625	.55369207	3090
3100	4.158	0.6188629	.50363718	8.862	0.5868175	.55400089	3100
3110	4.152	0.6182162	.50391793	8.856	0.5861746	.55430972	3110
3120	4.145	0.6175718	.50419868	8.851	0.5855342	.55461854	3120
3130	4.139	0.6169296	.50447943	8.845	0.5848962	.55492737	3130
3140	4.133	0.6162897	.50476018	8.839	0.5842603	.55523619	3140
3150	4.127	0.6156519	.50504098	8.834	0.5836265	.55554502	3150
3160	4.121	0.6150163	.50532168	8.828	0.5829950	.55585384	3160
3170	4.115	0.6143828	.50560243	8.823	0.5823655	.55616267	3170
3180	4.109	0.6137514	.50588318	8.817	0.5817380	.55647149	3180
3190	4.103	0.6131222	.50616393	8.812	0.5811129	.55678032	3190
3200	4.097	0.6124952	.50644468	8.806	0.5804899	.55708914	3200
3220	4.087	0.6112475	.50700618	3.795	0.5792502	.55770679	3220
3240	4.074	0.6100081	.50756768	3.785	0.5780189	.55832444	3240
3260	4.062	0.6087770	.50812918	3.774	0.5767958	.55894209	3260
3280	4.051	0.6075540	.50869068	3.763	0.5755808	.55955974	3280
3300	4.040	0.6063391	.50925218	3.753	0.5743740	.56017739	3300
3320	4.028	0.6051322	.50981368	3.743	0.5731751	.56079504	3320
3340	4.017	0.6039330	.51037518	3.732	0.5719839	.56141269	3340
3360	4.006	0.6027415	.51093668	3.722	0.5708005	.56203034	3360
3380	3.995	0.6015577	.51149818	3.712	0.5696247	.56264799	3380
3400	3.985	0.6003815	.51205968	3.702	0.5684566	.56326564	3400
3420	3.974	0.5992129	.51262118	3.692	0.5672960	.56388329	3420
3440	3.963	0.5980517	.51318268	3.682	0.5661428	.56450094	3440
3460	3.953	0.5968978	.51374418	3.673	0.5649968	.56511859	3460
3480	3.942	0.5957511	.51430568	3.663	0.5638581	.56573624	3480
3500	3.932	0.5946116	.51486718	3.654	0.5627265	.56635389	3500
3520	3.922	0.5934791	.51542868	3.644	0.5616020	.56697154	3520
3540	3.912	0.5923536	.51599018	3.635	0.5604845	.56758919	3540
3560	3.902	0.5912349	.51655168	3.626	0.5593739	.56820684	3560
3580	3.892	0.5901231	.51711318	3.616	0.5582701	.56882449	3580
3600	3.882	0.5890182	.51767468	3.607	0.5571731	.56944214	3600

Sine of Inclination (1 over)	$n = .012$			$n = .013$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
2955	8·696	0·5677020	·59947956	8·482	0·5418474	·64948619	2955
2960	8·698	0·5678658	·59964801	8·479	0·5415125	·64961868	2960
2965	8·690	0·5670292	·59981646	8·477	0·5411782	·64980117	2965
2970	8·687	0·5666936	·59998491	8·474	0·5408444	·64998365	2970
2975	8·684	0·5663586	·60015886	8·471	0·5405118	·65016614	2975
2980	8·681	0·5660242	·60032181	8·469	0·5401789	·65034863	2980
2985	8·679	0·5656906	·60049026	8·466	0·5398471	·65053112	2985
2990	8·676	0·5653576	·60065871	8·464	0·5395159	·65071360	2990
2995	8·678	0·5650251	·60082716	8·461	0·5391853	·65089609	2995
3000	8·670	0·5646932	·60099561	8·458	0·5388558	·65107858	3000
3010	8·665	0·5640312	·60188251	8·453	0·5381970	·65144855	3010
3020	8·659	0·5633717	·60166941	8·448	0·5375411	·65180853	3020
3030	8·654	0·5627144	·60200631	8·448	0·5368876	·65217350	3030
3040	8·648	0·5620595	·60234321	8·437	0·5362365	·65253848	3040
3050	8·643	0·5614070	·60268011	8·432	0·5355877	·65290345	3050
3060	8·637	0·5607569	·60301701	8·427	0·5349412	·65326843	3060
3070	8·632	0·5601090	·60335391	8·422	0·5342970	·65363340	3070
3080	8·626	0·5594634	·60369081	8·417	0·5336551	·65399838	3080
3090	8·621	0·5588200	·60402771	8·412	0·5330155	·65436335	3090
3100	8·616	0·5581790	·60436461	8·407	0·5323782	·65472833	3100
3110	8·610	0·5575401	·60470151	8·402	0·5317431	·65509330	3110
3120	8·605	0·5569036	·60503841	8·397	0·5311102	·65545828	3120
3130	8·600	0·5562694	·60537531	8·392	0·5304796	·65582325	3130
3140	8·594	0·5556378	·60571221	8·387	0·5298513	·65618823	3140
3150	8·589	0·5550074	·60604911	8·382	0·5292252	·65655320	3150
3160	8·584	0·5543797	·60638601	8·378	0·5286011	·65691818	3160
3170	8·579	0·5537541	·60672291	8·373	0·5279792	·65728315	3170
3180	8·574	0·5531305	·60705981	8·368	0·5273594	·65764813	3180
3190	8·569	0·5525092	·60739671	8·363	0·5267417	·65801310	3190
3200	8·564	0·5518901	·60773361	8·358	0·5261263	·65837808	3200
3220	8·554	0·5506582	·60840741	8·349	0·5249018	·65910803	3220
3240	8·544	0·5494345	·60908121	8·340	0·5236855	·65983798	3240
3260	8·534	0·5482191	·60975501	8·330	0·5224775	·66056793	3260
3280	8·524	0·5470119	·61042881	8·321	0·5212776	·66129788	3280
3300	8·514	0·5458127	·61110261	8·312	0·5200858	·66202783	3300
3320	8·504	0·5446214	·61177641	8·303	0·5189019	·66275778	3320
3340	8·495	0·5434381	·61245021	8·294	0·5177258	·66348773	3340
3360	8·485	0·5422623	·61312401	8·285	0·5165574	·66421768	3360
3380	8·476	0·5410941	·61379781	8·276	0·5153896	·66494763	3380
3400	8·467	0·5399336	·61447161	8·268	0·5142486	·66567758	3400
3420	8·458	0·5387809	·61514541	8·259	0·5130979	·66640753	3420
3440	8·449	0·5376351	·61581921	8·251	0·5119597	·66713748	3440
3460	8·440	0·5364969	·61649301	8·242	0·5108288	·66786743	3460
3480	8·431	0·5353658	·61716681	8·234	0·5097050	·66859738	3480
3500	8·422	0·5342419	·61784061	8·225	0·5085885	·66932733	3500
3520	8·413	0·5331250	·61851441	8·217	0·5074790	·67005728	3520
3540	8·404	0·5320151	·61918821	8·209	0·5063764	·67078723	3540
3560	8·396	0·5309120	·61986201	8·201	0·5052807	·67151718	3560
3580	8·387	0·5298159	·62053581	8·193	0·5041919	·67224713	3580
3600	8·379	0·5287265	·62120961	8·185	0·5031098	·67297708	3600

Sine of Inclina- tion (1 over)	n = .014			n = .015			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	8-299	0-5188911	·69939282	8-140	0-4969844	·74934945	2955
2960	8-297	0-5180580	·69958985	8-138	0-4966580	·74956001	2960
2965	8-294	0-5177255	·69978587	8-136	0-4963222	·74977058	2965
2970	8-291	0-5173986	·69998240	8-133	0-4959920	·74998114	2970
2975	8-289	0-5170623	·70017892	8-131	0-4956624	·75019170	2975
2980	8-286	0-5167816	·70037545	8-128	0-4953334	·75040226	2980
2985	8-284	0-5164016	·70057197	8-126	0-4950051	·75061283	2985
2990	8-281	0-5160721	·70076850	8-124	0-4946774	·75082339	2990
2995	8-279	0-5157438	·70096502	8-121	0-4943508	·75103395	2995
3000	8-277	0-5164150	·70116155	8-119	0-4940238	·75124451	3000
3010	8-272	0-5147604	·70155460	8-114	0-4938726	·75166564	3010
3020	8-267	0-5141081	·70194765	8-110	0-4927237	·75208676	3020
3030	8-262	0-5134581	·70234070	8-105	0-4920771	·75250789	3030
3040	8-257	0-5128105	·70273375	8-101	0-4914329	·75292901	3040
3050	8-252	0-5121658	·70312680	8-096	0-4907911	·75335014	3050
3060	8-247	0-5115224	·70351985	8-091	0-4901516	·75377126	3060
3070	8-243	0-5108818	·70391290	8-087	0-4895144	·75419239	3070
3080	8-238	0-5102435	·70430595	8-082	0-4888795	·75461351	3080
3090	8-233	0-5096074	·70469900	8-078	0-4882469	·75503464	3090
3100	8-228	0-5089736	·70509205	8-073	0-4876165	·75545576	3100
3110	8-224	0-5083421	·70548510	8-069	0-4869884	·75587689	3110
3120	8-219	0-5077128	·70587815	8-065	0-4863625	·75629801	3120
3130	8-214	0-5070858	·70627120	8-060	0-4857390	·75671914	3130
3140	8-210	0-5064610	·70666425	8-056	0-4851176	·75714026	3140
3150	8-205	0-5058384	·70705730	8-051	0-4844984	·75756139	3150
3160	8-200	0-5052178	·70745035	8-047	0-4838813	·75798251	3160
3170	8-196	0-5045995	·70784340	8-043	0-4832664	·75840364	3170
3180	8-192	0-5039838	·70823645	8-038	0-4826535	·75882476	3180
3190	8-187	0-5033692	·70862950	8-034	0-4820429	·75924589	3190
3200	8-182	0-5027578	·70902255	8-030	0-4814344	·75966701	3200
3220	8-174	0-5015398	·70980865	8-022	0-4802238	·76050926	3220
3240	8-165	0-5003306	·71059475	8-018	0-4790214	·76135151	3240
3260	8-156	0-4991297	·71138085	8-005	0-4778272	·76219876	3260
3280	8-147	0-4979369	·71216695	2-997	0-4766412	·76303601	3280
3300	8-139	0-4967522	·71295305	2-989	0-4754638	·76387826	3300
3320	8-130	0-4955754	·71373915	2-981	0-4742933	·76472051	3320
3340	8-122	0-4944064	·71452525	2-973	0-4731311	·76556276	3340
3360	8-113	0-4932450	·71531135	2-965	0-4719765	·76640501	3360
3380	8-105	0-4920918	·71609745	2-957	0-4708296	·76724726	3380
3400	8-097	0-4909458	·71688355	2-949	0-4696904	·76808951	3400
3420	8-089	0-4898067	·71766965	2-941	0-4685585	·76893176	3420
3440	8-081	0-4886756	·71845575	2-934	0-4674341	·76977401	3440
3460	8-073	0-4875517	·71924185	2-926	0-4663170	·77061626	3460
3480	8-065	0-4864350	·72002795	2-919	0-4652071	·77145851	3480
3500	8-057	0-4853254	·72081405	2-911	0-4641043	·77230076	3500
3520	8-049	0-4842229	·72160015	2-904	0-4630085	·77314301	3520
3540	8-042	0-4831274	·72238625	2-897	0-4619198	·77398526	3540
3560	8-034	0-4820387	·72317235	2-890	0-4608379	·77482751	3560
3580	8-027	0-4809569	·72395845	2-882	0-4597628	·77566976	3580
3600	8-019	0-4798818	·72474455	2-875	0-4586944	·77651201	3600

Sine of Inclina- tion (1 over)	$n = \cdot 017$			$n = \cdot 020$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	2·879	0·4592500	·84926271	2·585	0·4124683	9·9918260	2955
2960	2·877	0·4589218	·84950135	2·583	0·4121446	9·9941335	2960
2965	2·875	0·4585943	·84973999	2·581	0·4118214	9·9969410	2965
2970	2·873	0·4582673	·84997862	2·579	0·4114989	9·9997485	2970
2975	2·870	0·4579410	·85021726	2·577	0·4111770	1·0002556	2975
2980	2·868	0·4576152	·85045590	2·575	0·4108557	1·0005864	2980
2985	2·866	0·4572901	·85069454	2·574	0·4105350	1·0008171	2985
2990	2·864	0·4569657	·85093317	2·572	0·4102150	1·0010979	2990
2995	2·862	0·4566418	·85117181	2·570	0·4098955	1·0013786	2995
3000	2·860	0·4563185	·85141045	2·568	0·4095766	1·0016594	3000
3010	2·855	0·4556737	·85188772	2·564	0·4089407	1·0022209	3010
3020	2·851	0·4550813	·85236500	2·560	0·4083072	1·0027824	3020
3030	2·847	0·4544912	·85284227	2·557	0·4076759	1·0033439	3030
3040	2·843	0·4537535	·85331955	2·553	0·4070471	1·0039054	3040
3050	2·839	0·4531182	·85379682	2·549	0·4064206	1·0044669	3050
3060	2·835	0·4524852	·85427410	2·546	0·4057964	1·0050284	3060
3070	2·830	0·4518545	·85475187	2·542	0·4051745	1·0055899	3070
3080	2·826	0·4512260	·85522865	2·538	0·4045548	1·0061514	3080
3090	2·822	0·4505998	·85570592	2·535	0·4039375	1·0067129	3090
3100	2·818	0·4499760	·85618320	2·531	0·4033224	1·0072744	3100
3110	2·814	0·4493542	·85666047	2·528	0·4027095	1·0078359	3110
3120	2·810	0·4487348	·85713775	2·524	0·4020989	1·0083974	3120
3130	2·806	0·4481177	·85761502	2·521	0·4014906	1·0089589	3130
3140	2·802	0·4475027	·85809230	2·517	0·4008845	1·0095204	3140
3150	2·798	0·4468900	·85856957	2·514	0·4002805	1·0100819	3150
3160	2·794	0·4462794	·85904685	2·510	0·3996786	1·0106434	3160
3170	2·790	0·4456709	·85952412	2·507	0·3990789	1·0112049	3170
3180	2·787	0·4450645	·86000140	2·503	0·3984813	1·0117664	3180
3190	2·783	0·4444602	·86047867	2·500	0·3978858	1·0123279	3190
3200	2·779	0·4438582	·86095595	2·496	0·3972926	1·0128894	3200
3220	2·771	0·4426604	·86191050	2·490	0·3961123	1·0140124	3220
3240	2·764	0·4414708	·86286505	2·483	0·3949403	1·0151354	3240
3260	2·756	0·4402895	·86381960	2·476	0·3937765	1·0162584	3260
3280	2·749	0·4391164	·86477415	2·470	0·3926209	1·0173814	3280
3300	2·741	0·4379513	·86572870	2·463	0·3914733	1·0185044	3300
3320	2·734	0·4367941	·86668325	2·457	0·3903336	1·0196274	3320
3340	2·727	0·4356446	·86763780	2·450	0·3892016	1·0207504	3340
3360	2·720	0·4345028	·86859235	2·444	0·3880773	1·0218734	3360
3380	2·712	0·4333687	·86954690	2·438	0·3869606	1·0229964	3380
3400	2·705	0·4322422	·87050145	2·431	0·3858516	1·0241194	3400
3420	2·699	0·4311232	·87145600	2·425	0·3847500	1·0252424	3420
3440	2·692	0·4300116	·87241055	2·419	0·3836558	1·0263654	3440
3460	2·685	0·4289073	·87336510	2·413	0·3825688	1·0274884	3460
3480	2·678	0·4278101	·87431965	2·407	0·3814890	1·0286114	3480
3500	2·671	0·4267200	·87527420	2·401	0·3804163	1·0297344	3500
3520	2·665	0·4256369	·87622875	2·395	0·3793506	1·0308574	3520
3540	2·658	0·4245609	·87718330	2·389	0·3782919	1·0319804	3540
3560	2·652	0·4234917	·87813785	2·384	0·3772400	1·0331034	3560
3580	2·645	0·4224293	·87909240	2·378	0·3761949	1·0342264	3580
3600	2·639	0·4213736	·88004695	2·372	0·3751566	1·0353494	3600

Sine of Inclina- tion (1 over)	n = .0225			n = .0250			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	2.400	0.8801985	1.1240242	2.251	0.8525368	1.2489158	2955
2960	2.898	0.8798782	1.1248400	2.250	0.8522195	1.2492867	2960
2965	2.896	0.8795584	1.1246559	2.249	0.8519028	1.2496178	2965
2970	2.895	0.8792392	1.1249717	2.247	0.8515867	1.2499686	2970
2975	2.898	0.8789206	1.1252876	2.245	0.8512712	1.2503195	2975
2980	2.891	0.8786026	1.1256084	2.244	0.8509568	1.2506704	2980
2985	2.889	0.8782858	1.1259192	2.242	0.8506420	1.2510214	2985
2990	2.888	0.8779686	1.1262351	2.240	0.8503284	1.2513723	2990
2995	2.886	0.8776524	1.1265509	2.239	0.8500154	1.2517233	2995
3000	2.884	0.8773369	1.1268668	2.237	0.8497029	1.2520742	3000
3010	2.881	0.8767077	1.1274985	2.234	0.8490798	1.2527761	3010
3020	2.877	0.8760808	1.1281801	2.231	0.8484591	1.2534780	3020
3030	2.874	0.8754563	1.1287618	2.228	0.8478406	1.2541798	3030
3040	2.870	0.8748841	1.1293985	2.224	0.8472246	1.2548817	3040
3050	2.867	0.8742148	1.1800252	2.221	0.8466109	1.2555836	3050
3060	2.864	0.8735967	1.1806569	2.218	0.8459995	1.2562854	3060
3070	2.860	0.8729815	1.1812886	2.215	0.8453908	1.2569873	3070
3080	2.857	0.8723686	1.1819203	2.212	0.8447834	1.2576892	3080
3090	2.854	0.8717578	1.1825520	2.209	0.8441789	1.2583911	3090
3100	2.850	0.8711493	1.1831836	2.206	0.8435765	1.2590929	3100
3110	2.847	0.8705432	1.1838153	2.203	0.8429764	1.2597948	3110
3120	2.844	0.8699391	1.1844470	2.200	0.8423786	1.2604967	3120
3130	2.841	0.8693375	1.1850787	2.197	0.8417829	1.2611986	3130
3140	2.837	0.8687380	1.1857104	2.194	0.8411895	1.2619004	3140
3150	2.834	0.8681407	1.1863421	2.191	0.8405983	1.2626023	3150
3160	2.831	0.8675454	1.1869738	2.188	0.8400092	1.2633042	3160
3170	2.828	0.8669523	1.1876055	2.185	0.8394222	1.2640061	3170
3180	2.825	0.8663614	1.1882371	2.182	0.8388373	1.2647079	3180
3190	2.822	0.8657726	1.1888688	2.179	0.8382546	1.2654098	3190
3200	2.818	0.8651860	1.1895005	2.176	0.8376741	1.2661117	3200
3220	2.812	0.8640190	1.1407639	2.170	0.8365192	1.2675154	3220
3240	2.806	0.8628602	1.1420273	2.165	0.8353726	1.2689192	3240
3260	2.800	0.8617096	1.1432906	2.159	0.8342342	1.2703229	3260
3280	2.294	0.8605672	1.1445540	2.153	0.8331039	1.2717267	3280
3300	2.288	0.8594328	1.1458174	2.148	0.8319815	1.2731304	3300
3320	2.282	0.8583063	1.1470808	2.142	0.8308671	1.2745342	3320
3340	2.276	0.8571875	1.1483441	2.137	0.8297605	1.2759379	3340
3360	2.270	0.8560763	1.1496075	2.131	0.8286614	1.2773417	3360
3380	2.265	0.8549728	1.1508709	2.126	0.8275699	1.2787454	3380
3400	2.259	0.8538769	1.1521343	2.121	0.8264861	1.2801492	3400
3420	2.253	0.8527884	1.1533976	2.115	0.8254097	1.2815529	3420
3440	2.248	0.8517078	1.1546610	2.110	0.8243406	1.2829567	3440
3460	2.242	0.8506334	1.1559244	2.105	0.8232788	1.2843604	3460
3480	2.236	0.8495667	1.1571878	2.100	0.8222241	1.2857642	3480
3500	2.231	0.8485071	1.1584511	2.095	0.8211765	1.2871679	3500
3520	2.226	0.8474545	1.1597145	2.090	0.8201359	1.2885717	3520
3540	2.220	0.8464038	1.1609779	2.085	0.8191022	1.2899754	3540
3560	2.215	0.8453700	1.1622413	2.080	0.8180758	1.2913792	3560
3580	2.210	0.8443380	1.1635046	2.075	0.8170552	1.2927829	3580
3600	2.205	0.8433127	1.1647680	2.070	0.8160419	1.2941867	3600

Sine of Inclina- tion (1 over)	<i>n</i> = .0275			<i>n</i> = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	2.181	0.8285160	1.8788078	2.080	0.8074812	1.4986989	2955
2960	2.129	0.8282016	1.8741984	2.028	0.8071193	1.4991200	2960
2965	2.128	0.8278877	1.8745794	2.027	0.8068080	1.4995412	2965
2970	2.126	0.8275744	1.8749654	2.025	0.8064974	1.4999628	2970
2975	2.125	0.8272617	1.8753515	2.024	0.8061878	1.5003884	2975
2980	2.123	0.8269496	1.8757375	2.022	0.8058778	1.5008045	2980
2985	2.121	0.8266382	1.8761235	2.021	0.8055690	1.5012257	2985
2990	2.120	0.8263274	1.8765095	2.020	0.8052608	1.5016468	2990
2995	2.118	0.8260172	1.8768956	2.018	0.8049582	1.5020680	2995
3000	2.117	0.8257076	1.8772816	2.017	0.8046462	1.5024890	3000
3010	2.114	0.8250902	1.8780587	2.014	0.8040840	1.5038818	3010
3020	2.111	0.8244751	1.8788257	2.011	0.8034241	1.5041785	3020
3030	2.108	0.8238628	1.8795978	2.008	0.8028166	1.5050158	3030
3040	2.105	0.8232518	1.8803699	2.005	0.8022114	1.5058580	3040
3050	2.102	0.8226437	1.8811419	2.003	0.8016085	1.5067008	3050
3060	2.099	0.8220379	1.8819140	2.000	0.8010079	1.5075425	3060
3070	2.096	0.8214344	1.8826860	1.997	0.8004096	1.5083848	3070
3080	2.093	0.8208332	1.8834581	1.994	0.2998136	1.5092270	3080
3090	2.090	0.8202343	1.8842302	1.992	0.2992198	1.5100698	3090
3100	2.088	0.8196376	1.8850022	1.989	0.2986283	1.5109115	3100
3110	2.085	0.8190430	1.8857743	1.986	0.2980390	1.5117538	3110
3120	2.082	0.8184508	1.8865464	1.984	0.2974520	1.5125960	3120
3130	2.079	0.8178609	1.8873184	1.980	0.2968672	1.5134383	3130
3140	2.076	0.8172731	1.8880905	1.978	0.2962847	1.5142805	3140
3150	2.073	0.8166875	1.8888625	1.976	0.2957042	1.5151228	3150
3160	2.071	0.8161039	1.8896346	1.973	0.2951259	1.5159650	3160
3170	2.068	0.8155226	1.8904067	1.970	0.2945496	1.5168073	3170
3180	2.065	0.8149433	1.8911787	1.968	0.2939755	1.5176495	3180
3190	2.062	0.8143661	1.8919508	1.965	0.2934036	1.5184918	3190
3200	2.060	0.8137911	1.8927229	1.963	0.2928338	1.5193340	3200
3220	2.054	0.8126476	1.8942670	1.957	0.2917005	1.5210185	3220
3240	2.049	0.8115122	1.8958111	1.952	0.2905754	1.5227030	3240
3260	2.044	0.8103849	1.8973552	1.947	0.2894585	1.5243875	3260
3280	2.038	0.8092657	1.8988994	1.942	0.2883497	1.5260720	3280
3300	2.033	0.8081544	1.4004435	1.938	0.2872489	1.5277565	3300
3320	2.028	0.8070512	1.4019876	1.933	0.2861559	1.5294410	3320
3340	2.023	0.8059558	1.4035317	1.928	0.2850706	1.5311255	3340
3360	2.018	0.8048678	1.4050759	1.923	0.2839929	1.5328100	3360
3380	2.013	0.8037874	1.4066200	1.918	0.2829228	1.5344945	3380
3400	2.008	0.8027145	1.4081641	1.914	0.2818608	1.5361790	3400
3420	2.003	0.8016493	1.4097082	1.909	0.2808052	1.5378635	3420
3440	1.998	0.8005914	1.4112524	1.904	0.2797575	1.5395480	3440
3460	1.993	0.2995406	1.4127965	1.900	0.2787170	1.5412325	3460
3480	1.988	0.2984969	1.4143406	1.895	0.2776836	1.5429170	3480
3500	1.984	0.2974604	1.4158847	1.892	0.2766572	1.5446015	3500
3520	1.979	0.2964309	1.4174289	1.886	0.2756378	1.5462860	3520
3540	1.974	0.2954088	1.4189730	1.882	0.2746253	1.5479705	3540
3560	1.970	0.2943924	1.4205171	1.878	0.2736196	1.5496550	3560
3580	1.965	0.2933834	1.4220612	1.873	0.2726207	1.5513395	3580
3600	1.961	0.2923810	1.4236054	1.868	0.2716285	1.5530240	3600

Sine of Inclina- tion (1 over)	n = .035			n = .050			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
2955	1.871	0.2720797	1.7484821	1.585	0.2001436	2.4978815	2955
2960	1.870	0.2717725	1.7489734	1.584	0.1998472	2.4985384	2960
2965	1.868	0.2714659	1.7494647	1.583	0.1995514	2.4992353	2965
2970	1.867	0.2711600	1.7499560	1.582	0.1992562	2.4999371	2970
2975	1.866	0.2708546	1.7504473	1.581	0.1989616	2.5006390	2975
2980	1.864	0.2705498	1.7509386	1.580	0.1986676	2.5013409	2980
2985	1.863	0.2702456	1.7514299	1.579	0.1983643	2.5020428	2985
2990	1.862	0.2699421	1.7519212	1.578	0.1980616	2.5027446	2990
2995	1.861	0.2696382	1.7524126	1.577	0.1977694	2.5034465	2995
3000	1.859	0.2693369	1.7529039	1.576	0.1974978	2.5041484	3000
3010	1.857	0.2687340	1.7538865	1.574	0.1969165	2.5055521	3010
3020	1.854	0.2681335	1.7548691	1.572	0.1963375	2.5069559	3020
3030	1.852	0.2675353	1.7558517	1.569	0.1957608	2.5083596	3030
3040	1.849	0.2669394	1.7568344	1.567	0.1951864	2.5097634	3040
3050	1.846	0.2663458	1.7578170	1.565	0.1946143	2.5111672	3050
3060	1.844	0.2657546	1.7587996	1.564	0.1940445	2.5125709	3060
3070	1.841	0.2651656	1.7597822	1.561	0.1934770	2.5139746	3070
3080	1.839	0.2645789	1.7607649	1.559	0.1929117	2.5153784	3080
3090	1.837	0.2639944	1.7617475	1.557	0.1923487	2.5167821	3090
3100	1.834	0.2634122	1.7627301	1.555	0.1917879	2.5181859	3100
3110	1.832	0.2628322	1.7637127	1.553	0.1912298	2.5195896	3110
3120	1.829	0.2622545	1.7646954	1.551	0.1906729	2.5209934	3120
3130	1.827	0.2616790	1.7656780	1.549	0.1901188	2.5223971	3130
3140	1.824	0.2611057	1.7666606	1.547	0.1895669	2.5238009	3140
3150	1.822	0.2605345	1.7676432	1.545	0.1890171	2.5252046	3150
3160	1.820	0.2599655	1.7686259	1.543	0.1884693	2.5266084	3160
3170	1.817	0.2593986	1.7696085	1.541	0.1879238	2.5280121	3170
3180	1.815	0.2588337	1.7705911	1.539	0.1873708	2.5294159	3180
3190	1.812	0.2582710	1.7715737	1.538	0.1868389	2.5308196	3190
3200	1.810	0.2577105	1.7725564	1.536	0.1862996	2.5322234	3200
3220	1.805	0.2565957	1.7745216	1.532	0.1852274	2.5350309	3220
3240	1.801	0.2554891	1.7764869	1.528	0.1841633	2.5378384	3240
3260	1.796	0.2543906	1.7784521	1.524	0.1831072	2.5406459	3260
3280	1.792	0.2533002	1.7804174	1.521	0.1820591	2.5434534	3280
3300	1.787	0.2522178	1.7823826	1.517	0.1810190	2.5462609	3300
3320	1.783	0.2511432	1.7843479	1.514	0.1799867	2.5490684	3320
3340	1.779	0.2500763	1.7863131	1.510	0.1789620	2.5518759	3340
3360	1.774	0.2490170	1.7882784	1.506	0.1779449	2.5546834	3360
3380	1.770	0.2479652	1.7902436	1.503	0.1769353	2.5574909	3380
3400	1.766	0.2469210	1.7922089	1.499	0.1759332	2.5602984	3400
3420	1.762	0.2458842	1.7941741	1.496	0.1749385	2.5631059	3420
3440	1.757	0.2448548	1.7961394	1.493	0.1739510	2.5659134	3440
3460	1.753	0.2438325	1.7981046	1.489	0.1729707	2.5687209	3460
3480	1.749	0.2428173	1.8000699	1.486	0.1719974	2.5715284	3480
3500	1.745	0.2418092	1.8020351	1.483	0.1710311	2.5743359	3500
3520	1.741	0.2408080	1.8040004	1.479	0.1700717	2.5771434	3520
3540	1.737	0.2398137	1.8059656	1.476	0.1691191	2.5799509	3540
3560	1.733	0.2388262	1.8079309	1.473	0.1681738	2.5827584	3560
3580	1.729	0.2378455	1.8098961	1.470	0.1672342	2.5855659	3580
3600	1.725	0.2368714	1.8118614	1.467	0.1663017	2.5883734	3600

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
8620	4.207	0.6239070	46641256	8.872	0.5879199	51823618	8620
8640	4.196	0.6228069	46691791	8.862	0.5868282	51879768	8640
8660	4.185	0.6217133	46742826	8.853	0.5857429	51935918	8660
8680	4.175	0.6206262	46792861	8.843	0.5846641	51992068	8680
8700	4.164	0.6195455	46843896	8.833	0.5835917	52048218	8700
8720	4.154	0.6184712	46894931	8.824	0.5825256	52104368	8720
8740	4.144	0.6174031	46944466	8.815	0.5814658	52160518	8740
8760	4.134	0.6163413	46995001	8.806	0.5804123	52216668	8760
8780	4.124	0.6152854	47045536	8.796	0.5793648	52272818	8780
8800	4.114	0.6142357	47096071	8.787	0.5783234	52328968	8800
8820	4.104	0.6131919	47146606	8.778	0.5772879	52385118	8820
8840	4.094	0.6121542	47197141	8.770	0.5762584	52441268	8840
8860	4.084	0.6111223	47247676	8.760	0.5752348	52497418	8860
8880	4.075	0.6100961	47298211	8.752	0.5742169	52553568	8880
8900	4.065	0.6090757	47348746	8.743	0.5732048	52609718	8900
8920	4.056	0.6080609	47399281	8.734	0.5721983	52665868	8920
8940	4.046	0.6070518	47449816	8.726	0.5711975	52722018	8940
8960	4.037	0.6060484	47500351	8.717	0.5702023	52778168	8960
8980	4.028	0.6050505	47550886	8.709	0.5692126	52834318	8980
4000	4.018	0.6040580	47601421	8.700	0.5682284	52890468	4000
4020	4.009	0.6030709	47651956	8.692	0.5672496	52946618	4020
4040	4.000	0.6020892	47702491	8.684	0.5662762	53002768	4040
4060	3.991	0.6011128	47753026	8.675	0.5653080	53058918	4060
4080	3.982	0.6001416	47803561	8.667	0.5643450	53115068	4080
4100	3.974	0.5991756	47854096	8.659	0.5633872	53171218	4100
4120	3.965	0.5982148	47904631	8.651	0.5624346	53227368	4120
4140	3.956	0.5972590	47955166	8.643	0.5614870	53283518	4140
4160	3.947	0.5963083	48005701	8.635	0.5605445	53339668	4160
4180	3.939	0.5953625	48056236	8.627	0.5596070	53395818	4180
4200	3.930	0.5944218	48106771	8.620	0.5586745	53451968	4200
4220	3.922	0.5934859	48157306	8.612	0.5577468	53508118	4220
4240	3.913	0.5925549	48207841	8.604	0.5568241	53564268	4240
4260	3.905	0.5916287	48258376	8.597	0.5559060	53620418	4260
4280	3.897	0.5907072	48308911	8.589	0.5549928	53676568	4280
4300	3.889	0.5897905	48359446	8.582	0.5540843	53732718	4300
4320	3.880	0.5888786	48409981	8.574	0.5531805	53788868	4320
4340	3.872	0.5879712	48460516	8.567	0.5522813	53845018	4340
4360	3.864	0.5870684	48511051	8.559	0.5513867	53901168	4360
4380	3.856	0.5861701	48561586	8.552	0.5504967	53957318	4380
4400	3.848	0.5852764	48612121	8.545	0.5496111	54013468	4400
4420	3.840	0.5843871	48662656	8.538	0.5487299	54069618	4420
4440	3.833	0.5835023	48713191	8.531	0.5478533	54125768	4440
4460	3.825	0.5826219	48763726	8.524	0.5469811	54181918	4460
4480	3.817	0.5817457	48814261	8.517	0.5461131	54238068	4480
4500	3.809	0.5808739	48864796	8.510	0.5452494	54294218	4500
4520	3.802	0.5800063	48915331	8.503	0.5443899	54350368	4520
4540	3.794	0.5791430	48965866	8.496	0.5435348	54406518	4540
4560	3.787	0.5782839	49016401	8.487	0.5426838	54462668	4560
4580	3.779	0.5774289	49066936	8.482	0.5418370	54518818	4580
4600	3.772	0.5765780	49117471	8.475	0.5409943	54574968	4600

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
8620	8.598	0.5560827	57005979	8.370	0.5276488	62188341	8620
8640	8.589	0.5549989	57067744	8.362	0.5265677	62255721	8640
8660	8.580	0.5539216	57129509	8.353	0.5254980	62323101	8660
8680	8.571	0.5528507	57191274	8.345	0.5244248	62390481	8680
8700	8.563	0.5517863	57253089	8.337	0.5233779	62457861	8700
8720	8.554	0.5507282	57314804	8.329	0.5223274	62525241	8720
8740	8.545	0.5496765	57376569	8.321	0.5212892	62592621	8740
8760	8.537	0.5486309	57438334	8.313	0.5202452	62660001	8760
8780	8.529	0.5475913	57500099	8.305	0.5192132	62727381	8780
8800	8.520	0.5465577	57561864	8.298	0.5181878	62794761	8800
8820	8.512	0.5455301	57623629	8.290	0.5171678	62862141	8820
8840	8.504	0.5445085	57685394	8.282	0.5161533	62929521	8840
8860	8.495	0.5434928	57747159	8.275	0.5151451	62996901	8860
8880	8.487	0.5424829	57808924	8.267	0.5141429	63064281	8880
8900	8.479	0.5414787	57870689	8.259	0.5131463	63131661	8900
8920	8.471	0.5404802	57932454	8.252	0.5121553	63199041	8920
8940	8.463	0.5394873	57994219	8.245	0.5111699	63266421	8940
8960	8.455	0.5384999	58055984	8.237	0.5101900	63333801	8960
8980	8.448	0.5375180	58117749	8.230	0.5092157	63401181	8980
4000	8.440	0.5365417	58179514	8.223	0.5082470	63468561	4000
4020	8.432	0.5355708	58241279	8.216	0.5072837	63535941	4020
4040	8.425	0.5346053	58303044	8.209	0.5063257	63603321	4040
4060	8.417	0.5336451	58364809	8.202	0.5053730	63670701	4060
4080	8.409	0.5326899	58426574	8.195	0.5044254	63738081	4080
4100	8.402	0.5317400	58488339	8.188	0.5034829	63805461	4100
4120	8.395	0.5307952	58550104	8.181	0.5025456	63872841	4120
4140	8.387	0.5298556	58611869	8.174	0.5016134	63940221	4140
4160	8.380	0.5289210	58673634	8.167	0.5006863	64007601	4160
4180	8.373	0.5279913	58735399	8.161	0.4997643	64074981	4180
4200	8.366	0.5270665	58797164	8.154	0.4988471	64142361	4200
4220	8.359	0.5261467	58858929	8.147	0.4979347	64209741	4220
4240	8.352	0.5252318	58920694	8.141	0.4970273	64277121	4240
4260	8.344	0.5243216	58982459	8.134	0.4961246	64344501	4260
4280	8.337	0.5234162	59044224	8.128	0.4952266	64411881	4280
4300	8.331	0.5225155	59105989	8.121	0.4943335	64479261	4300
4320	8.324	0.5216196	59167754	8.115	0.4934451	64546641	4320
4340	8.317	0.5207282	59229519	8.109	0.4925612	64614021	4340
4360	8.310	0.5198414	59291284	8.102	0.4916819	64681401	4360
4380	8.303	0.5189592	59353049	8.096	0.4908071	64748781	4380
4400	8.297	0.5180814	59414814	8.090	0.4899368	64816161	4400
4420	8.290	0.5172081	59476579	8.084	0.4890709	64883541	4420
4440	8.284	0.5163393	59538344	8.078	0.4882096	64950921	4440
4460	8.277	0.5154748	59600109	8.072	0.4873526	65018301	4460
4480	8.271	0.5146146	59661874	8.065	0.4864998	65085681	4480
4500	8.264	0.5137587	59723639	8.060	0.4856513	65153061	4500
4520	8.258	0.5129071	59785404	8.054	0.4848071	65220441	4520
4540	8.251	0.5120597	59847169	8.048	0.4839672	65287821	4540
4560	8.245	0.5112164	59908934	8.042	0.4831315	65355201	4560
4580	8.239	0.5103774	59970699	8.036	0.4822999	65422581	4580
4600	8.233	0.5095425	60032464	8.030	0.4814724	65489961	4600

Sine of Inclina- tion (1 over)	<i>n</i> = .018			<i>n</i> = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
8620	3·177	0·5020844	·67870708	3·012	0·4788184	·72558065	8620
8640	3·189	0·5009655	·67448698	3·004	0·4777516	·72681675	8640
8660	3·162	0·4999031	·67516693	2·997	0·4766962	·72710285	8660
8680	3·154	0·4988472	·67589688	2·990	0·4756473	·72788895	8680
8700	3·146	0·4977976	·67662688	2·983	0·4746047	·72867505	8700
8720	3·189	0·4967544	·67735678	2·976	0·4735685	·72946115	8720
8740	3·181	0·4957175	·67808678	2·969	0·4725385	·73024725	8740
8760	3·124	0·4946867	·67881668	2·962	0·4715147	·73103335	8760
8780	3·116	0·4936620	·67954668	2·955	0·4704970	·73181945	8780
3800	3·109	0·4926484	·68027658	2·948	0·4694853	·73260555	3800
3820	3·102	0·4916307	·68100658	2·941	0·4684796	·73339165	3820
3840	3·095	0·4906240	·68173648	2·934	0·4674799	·73417775	3840
3860	3·088	0·4896231	·68246648	2·927	0·4664860	·73496385	3860
3880	3·081	0·4886280	·68319638	2·921	0·4654979	·73574995	3880
3900	3·074	0·4876386	·68392638	2·914	0·4645154	·73653605	3900
3920	3·067	0·4866548	·68465628	2·908	0·4635385	·73732215	3920
3940	3·060	0·4856767	·68538628	2·901	0·4625678	·73810825	3940
3960	3·053	0·4847041	·68611618	2·895	0·4616017	·73889435	3960
3980	3·046	0·4837372	·68684618	2·888	0·4606417	·73968045	3980
4000	3·039	0·4827757	·68757608	2·882	0·4596871	·74046655	4000
4020	3·038	0·4818195	·68830608	2·876	0·4587379	·74125265	4020
4040	3·026	0·4808687	·68903598	2·869	0·4577940	·74203875	4040
4060	3·019	0·4799232	·68976593	2·863	0·4568554	·74282485	4060
4080	3·018	0·4789828	·69049588	2·857	0·4559219	·74361095	4080
4100	3·006	0·4780476	·69122588	2·851	0·4549936	·74439705	4100
4120	3·000	0·4771176	·69195578	2·845	0·4540705	·74518315	4120
4140	2·994	0·4761926	·69268573	2·839	0·4531524	·74596925	4140
4160	2·987	0·4752727	·69341568	2·833	0·4522394	·74675535	4160
4180	2·981	0·4743577	·69414568	2·827	0·4513313	·74754145	4180
4200	2·975	0·4734477	·69487558	2·821	0·4504282	·74832755	4200
4220	2·969	0·4725426	·69560553	2·815	0·4495300	·74911365	4220
4240	2·962	0·4716424	·69633548	2·810	0·4486366	·74989975	4240
4260	2·956	0·4707469	·69706543	2·804	0·4477480	·75068585	4260
4280	2·950	0·4698561	·69779538	2·798	0·4468641	·75147195	4280
4300	2·944	0·4689701	·69852533	2·792	0·4459860	·75225805	4300
4320	2·938	0·4680888	·69925528	2·787	0·4451105	·75304415	4320
4340	2·932	0·4672121	·69998523	2·781	0·4442406	·75383025	4340
4360	2·926	0·4663399	·70071518	2·776	0·4433763	·75461635	4360
4380	2·921	0·4654723	·70144513	2·770	0·4425146	·75540245	4380
4400	2·915	0·4646091	·70217508	2·765	0·4416583	·75618855	4400
4420	2·909	0·4637504	·70290503	2·759	0·4408064	·75697465	4420
4440	2·908	0·4628962	·70363498	2·754	0·4399590	·75776075	4440
4460	2·898	0·4620463	·70436493	2·749	0·4391160	·75854685	4460
4480	2·892	0·4612007	·70509488	2·743	0·4382772	·75933295	4480
4500	2·886	0·4603593	·70582483	2·738	0·4374427	·76011905	4500
4520	2·881	0·4595223	·70655478	2·733	0·4366124	·76090515	4520
4540	2·875	0·4586895	·70728473	2·728	0·4357864	·76169125	4540
4560	2·870	0·4578608	·70801468	2·722	0·4349646	·76247735	4560
4580	2·864	0·4570363	·70874463	2·717	0·4341469	·76326345	4580
4600	2·859	0·4562159	·70947458	2·712	0·4333333	·76404955	4600

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
8620	2·868	0·4576827	·77735428	2·632	0·4208246	·88100150	8620
8640	2·861	0·4565776	·77819651	2·626	0·4192821	·88195605	8640
8660	2·854	0·4555289	·77903876	2·620	0·4182461	·88291080	8660
8680	2·848	0·4544867	·77988101	2·618	0·4172166	·88386515	8680
8700	2·841	0·4534509	·78072826	2·607	0·4161984	·88481970	8700
8720	2·834	0·4524214	·78156551	2·601	0·4151765	·88577425	8720
8740	2·827	0·4513981	·78240776	2·595	0·4141659	·88672880	8740
8760	2·821	0·4503810	·78325001	2·589	0·4131614	·88768335	8760
8780	2·814	0·4493700	·78409226	2·583	0·4121680	·88863790	8780
8800	2·808	0·4483650	·78493451	2·577	0·4111706	·88959245	8800
8820	2·801	0·4473659	·78577676	2·571	0·4101841	·89054700	8820
8840	2·795	0·4463729	·78661901	2·566	0·4092036	·89150155	8840
8860	2·789	0·4453857	·78746126	2·560	0·4082290	·89245610	8860
8880	2·782	0·4444042	·78830351	2·554	0·4072601	·89341065	8880
8900	2·776	0·4434283	·78914576	2·549	0·4062969	·89436520	8900
8920	2·770	0·4424582	·78998801	2·543	0·4053393	·89531975	8920
8940	2·764	0·4414987	·79083026	2·537	0·4043873	·89627430	8940
8960	2·758	0·4405348	·79167251	2·532	0·4034409	·89722885	8960
8980	2·752	0·4395814	·79251476	2·526	0·4025000	·89818340	8980
4000	2·746	0·4386334	·79335701	2·521	0·4015646	·89913795	4000
4020	2·740	0·4376908	·79419926	2·516	0·4006345	·90009250	4020
4040	2·734	0·4367586	·79504151	2·510	0·3997097	·90104705	4040
4060	2·728	0·4358216	·79588376	2·505	0·3987902	·90200160	4060
4080	2·722	0·4348948	·79672601	2·500	0·3978759	·90295615	4080
4100	2·716	0·4339731	·79756826	2·494	0·3969667	·90391070	4100
4120	2·711	0·4330566	·79841051	2·489	0·3960626	·90486525	4120
4140	2·705	0·4321451	·79925276	2·484	0·3951636	·90581980	4140
4160	2·699	0·4312387	·80009501	2·479	0·3942697	·90677435	4160
4180	2·694	0·4303373	·80093726	2·474	0·3933807	·90772900	4180
4200	2·688	0·4294408	·80177951	2·469	0·3924966	·90868345	4200
4220	2·683	0·4285491	·80262176	2·464	0·3916174	·90963800	4220
4240	2·677	0·4276623	·80346401	2·459	0·3907431	·91059255	4240
4260	2·672	0·4267803	·80430626	2·454	0·3898735	·91154710	4260
4280	2·666	0·4259031	·80514851	2·449	0·3890086	·91250165	4280
4300	2·661	0·4250305	·80599076	2·444	0·3881484	·91345620	4300
4320	2·656	0·4241626	·80683301	2·439	0·3872929	·91441075	4320
4340	2·650	0·4232993	·80767526	2·435	0·3864420	·91536530	4340
4360	2·645	0·4224405	·80851751	2·430	0·3855956	·91631985	4360
4380	2·640	0·4215863	·80935976	2·425	0·3847538	·91727440	4380
4400	2·635	0·4207366	·81020201	2·421	0·3839164	·91822895	4400
4420	2·630	0·4198913	·81104426	2·416	0·3830834	·91918350	4420
4440	2·625	0·4190505	·81188651	2·411	0·3822549	·92013805	4440
4460	2·619	0·4182140	·81272876	2·407	0·3814307	·92109260	4460
4480	2·614	0·4173818	·81357101	2·402	0·3806108	·92204715	4480
4500	2·609	0·4165538	·81441326	2·398	0·3797952	·92300170	4500
4520	2·605	0·4157301	·81525551	2·393	0·3789838	·92395625	4520
4540	2·600	0·4149106	·81609776	2·389	0·3781766	·92491080	4540
4560	2·595	0·4140953	·81694001	2·384	0·3773735	·92586535	4560
4580	2·590	0·4132842	·81778226	2·380	0·3765747	·92681990	4580
4600	2·585	0·4124771	·81862451	2·376	0·3757798	·92777445	4600

FOR SPECIAL INCLINATIONS AND VALUES OF (n).



Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
3620	2.367	0.3741248	1.0864724	2.199	0.3422941	1.1660814	3620
3640	2.361	0.3730997	1.0875954	2.194	0.3412819	1.1672948	3640
3660	2.355	0.3720810	1.0887184	2.189	0.3402762	1.1685581	3660
3680	2.350	0.3710687	1.0898414	2.184	0.3392769	1.1698215	3680
3700	2.345	0.3700627	1.0409644	2.179	0.3382839	1.1710849	3700
3720	2.339	0.3690680	1.0420874	2.174	0.3372972	1.1723483	3720
3740	2.334	0.3680696	1.0432104	2.169	0.3363165	1.1736116	3740
3760	2.329	0.3670823	1.0443384	2.164	0.3353428	1.1748750	3760
3780	2.323	0.3661010	1.0454584	2.160	0.3343742	1.1761384	3780
3800	2.318	0.3651258	1.0465794	2.155	0.3334119	1.1774018	3800
3820	2.313	0.3641566	1.0477024	2.150	0.3324555	1.1786651	3820
3840	2.308	0.3631982	1.0488254	2.145	0.3315051	1.1799285	3840
3860	2.303	0.3622357	1.0499484	2.141	0.3305604	1.1811919	3860
3880	2.298	0.3612839	1.0510714	2.136	0.3296215	1.1824553	3880
3900	2.293	0.3603378	1.0521944	2.132	0.3286839	1.1837186	3900
3920	2.288	0.3593973	1.0533174	2.127	0.3277606	1.1849820	3920
3940	2.283	0.3584624	1.0544404	2.122	0.3268383	1.1862454	3940
3960	2.278	0.3575380	1.0555634	2.118	0.3259221	1.1875038	3960
3980	2.273	0.3566092	1.0566864	2.114	0.3250111	1.1887721	3980
4000	2.268	0.3556903	1.0578094	2.109	0.3241056	1.1900355	4000
4020	2.263	0.3547778	1.0589324	2.105	0.3232054	1.1912989	4020
4040	2.259	0.3538701	1.0600554	2.100	0.3223105	1.1925623	4040
4060	2.254	0.3529676	1.0611784	2.096	0.3214208	1.1938256	4060
4080	2.249	0.3520702	1.0623014	2.092	0.3205362	1.1950890	4080
4100	2.245	0.3511780	1.0634244	2.088	0.3196568	1.1963524	4100
4120	2.240	0.3502909	1.0645474	2.083	0.3187825	1.1976158	4120
4140	2.236	0.3494089	1.0656704	2.079	0.3179132	1.1988791	4140
4160	2.231	0.3485319	1.0667934	2.075	0.3170489	1.2001425	4160
4180	2.227	0.3476599	1.0679164	2.071	0.3161895	1.2014059	4180
4200	2.222	0.3467927	1.0690394	2.067	0.3153351	1.2026693	4200
4220	2.218	0.3459304	1.0701624	2.063	0.3144855	1.2039326	4220
4240	2.214	0.3450729	1.0712854	2.059	0.3136408	1.2051960	4240
4260	2.209	0.3442202	1.0724084	2.055	0.3128008	1.2064594	4260
4280	2.205	0.3433721	1.0735314	2.051	0.3119654	1.2077228	4280
4300	2.201	0.3425289	1.0746544	2.047	0.3111348	1.2089861	4300
4320	2.196	0.3416902	1.0757774	2.043	0.3103088	1.2102495	4320
4340	2.192	0.3408561	1.0769004	2.039	0.3094874	1.2115129	4340
4360	2.188	0.3400266	1.0780234	2.035	0.3086705	1.2127763	4360
4380	2.184	0.3392016	1.0791464	2.032	0.3078581	1.2140396	4380
4400	2.180	0.3383809	1.0802694	2.028	0.3070501	1.2153030	4400
4420	2.176	0.3375648	1.0813924	2.024	0.3062465	1.2165664	4420
4440	2.171	0.3367580	1.0825154	2.020	0.3054474	1.2178298	4440
4460	2.167	0.3359456	1.0836384	2.017	0.3046526	1.2190931	4460
4480	2.163	0.3351425	1.0847614	2.013	0.3038620	1.2203565	4480
4500	2.159	0.3343436	1.0858844	2.009	0.3030756	1.2216199	4500
4520	2.156	0.3335489	1.0870074	2.006	0.3022985	1.2228833	4520
4540	2.152	0.3327584	1.0881304	2.002	0.3015156	1.2241466	4540
4560	2.148	0.3319721	1.0892534	1.999	0.3007419	1.2254100	4560
4580	2.144	0.3311899	1.0903764	1.995	0.2999721	1.2266734	4580
4600	2.140	0.3304117	1.0914994	1.992	0.2992065	1.2279368	4600

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
8620	2.066	0.8150852	1.2955904	1.956	0.2918853	1.4251495	8620
8640	2.061	0.8140849	1.2969942	1.952	0.2902960	1.4266986	8640
8660	2.056	0.8130412	1.2983979	1.947	0.2894181	1.4282377	8660
8680	2.051	0.8120588	1.2998017	1.943	0.2884367	1.4297819	8680
8700	2.047	0.8110726	1.3012054	1.939	0.2874666	1.4313260	8700
8720	2.042	0.8100978	1.3026092	1.934	0.2865028	1.4328701	8720
8740	2.038	0.8091293	1.3040129	1.930	0.2855451	1.4344142	8740
8760	2.033	0.8081669	1.3054167	1.926	0.2845936	1.4359584	8760
8780	2.029	0.8072104	1.3068204	1.922	0.2836480	1.4375025	8780
8800	2.024	0.8062600	1.3082242	1.917	0.2827084	1.4390466	8800
8820	2.020	0.8053155	1.3096279	1.913	0.2817748	1.4405907	8820
8840	2.015	0.8043769	1.3110317	1.909	0.2808471	1.4421349	8840
8860	2.011	0.8034441	1.3124354	1.905	0.2799252	1.4436790	8860
8880	2.007	0.8025170	1.3138392	1.901	0.2790090	1.4452231	8880
8900	2.003	0.8015955	1.3152429	1.897	0.2780938	1.4467672	8900
8920	1.998	0.8006797	1.3166467	1.893	0.2771933	1.4483114	8920
8940	1.994	0.2997694	1.3180504	1.889	0.2762939	1.4498555	8940
8960	1.990	0.2988646	1.3194542	1.885	0.2754000	1.4513996	8960
8980	1.986	0.2979655	1.3208579	1.882	0.2745116	1.4529437	8980
4000	1.982	0.2970716	1.3222617	1.878	0.2736285	1.4544879	4000
4020	1.978	0.2961831	1.3236654	1.874	0.2727508	1.4560320	4020
4040	1.974	0.2953000	1.3250692	1.870	0.2718784	1.4575761	4040
4060	1.970	0.2944220	1.3264729	1.866	0.2710112	1.4591202	4060
4080	1.966	0.2935492	1.3278767	1.863	0.2701491	1.4606644	4080
4100	1.962	0.2926814	1.3292804	1.859	0.2692921	1.4622085	4100
4120	1.958	0.2918188	1.3306842	1.855	0.2684403	1.4637526	4120
4140	1.954	0.2909612	1.3320879	1.852	0.2675934	1.4652967	4140
4160	1.950	0.2901086	1.3334917	1.848	0.2667515	1.4668409	4160
4180	1.947	0.2892609	1.3348954	1.845	0.2659145	1.4683850	4180
4200	1.943	0.2884181	1.3362992	1.841	0.2650824	1.4699291	4200
4220	1.939	0.2875801	1.3377029	1.838	0.2642551	1.4714732	4220
4240	1.935	0.2867470	1.3391067	1.834	0.2634327	1.4730174	4240
4260	1.932	0.2859186	1.3405104	1.831	0.2626149	1.4745615	4260
4280	1.928	0.2850949	1.3419142	1.827	0.2618019	1.4761056	4280
4300	1.924	0.2842759	1.3433179	1.824	0.2609935	1.4776497	4300
4320	1.921	0.2834615	1.3447217	1.820	0.2601897	1.4791939	4320
4340	1.917	0.2826516	1.3461254	1.817	0.2593905	1.4807380	4340
4360	1.914	0.2818462	1.3475292	1.814	0.2585958	1.4822821	4360
4380	1.910	0.2810453	1.3489329	1.811	0.2578055	1.4838262	4380
4400	1.907	0.2802489	1.3503367	1.807	0.2570196	1.4853704	4400
4420	1.903	0.2794569	1.3517404	1.804	0.2562338	1.4869145	4420
4440	1.900	0.2786693	1.3531442	1.801	0.2554461	1.4884586	4440
4460	1.896	0.2778861	1.3545479	1.798	0.2546885	1.4900027	4460
4480	1.893	0.2771070	1.3559517	1.794	0.2539200	1.4915469	4480
4500	1.889	0.2763321	1.3573554	1.791	0.2531556	1.4930910	4500
4520	1.886	0.2755614	1.3587592	1.788	0.2523956	1.4946351	4520
4540	1.883	0.2747950	1.3601629	1.785	0.2516396	1.4961792	4540
4560	1.879	0.2740327	1.3615667	1.782	0.2508879	1.4977234	4560
4580	1.876	0.2732745	1.3629704	1.779	0.2501402	1.4992675	4580
4600	1.873	0.2725203	1.3643742	1.776	0.2493965	1.5008116	4600

Sine of Inclina- tion (1 over)	$n = .030$			$n = .035$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
3620	1·865	0·2706429	1·5547085	1·721	0·2359088	1·8188266	3620
3640	1·861	0·2696638	1·5563990	1·718	0·2349428	1·8157919	3640
3660	1·856	0·2686911	1·5580775	1·714	0·2339882	1·8177571	3660
3680	1·852	0·2677248	1·5597620	1·710	0·2330399	1·8197224	3680
3700	1·848	0·2667647	1·5614465	1·706	0·2320979	1·8216876	3700
3720	1·844	0·2658109	1·5631810	1·703	0·2311622	1·8236529	3720
3740	1·840	0·2648635	1·5648155	1·699	0·2302326	1·8256181	3740
3760	1·836	0·2639220	1·5665000	1·696	0·2293091	1·8275834	3760
3780	1·832	0·2629865	1·5681845	1·692	0·2283916	1·8295486	3780
3800	1·828	0·2620570	1·5698690	1·688	0·2274801	1·8315139	3800
3820	1·824	0·2611334	1·5715535	1·685	0·2265744	1·8334791	3820
3840	1·821	0·2602157	1·5732380	1·681	0·2256746	1·8354444	3840
3860	1·817	0·2593038	1·5749225	1·678	0·2247806	1·8374096	3860
3880	1·813	0·2583976	1·5766070	1·675	0·2238922	1·8393749	3880
3900	1·809	0·2574970	1·5782915	1·671	0·2230094	1·8413401	3900
3920	1·806	0·2566020	1·5799760	1·668	0·2221322	1·8433054	3920
3940	1·802	0·2557126	1·5816605	1·664	0·2212606	1·8452706	3940
3960	1·798	0·2548286	1·5833450	1·661	0·2203945	1·8472359	3960
3980	1·795	0·2539501	1·5850295	1·658	0·2195338	1·8492011	3980
4000	1·791	0·2530771	1·5867140	1·655	0·2186785	1·8511664	4000
4020	1·787	0·2522094	1·5883985	1·651	0·2178285	1·8531316	4020
4040	1·784	0·2513470	1·5900830	1·648	0·2169888	1·8550969	4040
4060	1·780	0·2504897	1·5917675	1·645	0·2161442	1·8570621	4060
4080	1·777	0·2496374	1·5934520	1·642	0·2153096	1·8590274	4080
4100	1·773	0·2487903	1·5951365	1·639	0·2144802	1·8609926	4100
4120	1·770	0·2479483	1·5968210	1·636	0·2136559	1·8629579	4120
4140	1·766	0·2471113	1·5985055	1·632	0·2128365	1·8649231	4140
4160	1·763	0·2462798	1·6001900	1·629	0·2120221	1·8668884	4160
4180	1·760	0·2454522	1·6018745	1·626	0·2112126	1·8688536	4180
4200	1·756	0·2446299	1·6035590	1·623	0·2104080	1·8708189	4200
4220	1·753	0·2438125	1·6052435	1·620	0·2096081	1·8727841	4220
4240	1·750	0·2429999	1·6069280	1·617	0·2088130	1·8747494	4240
4260	1·747	0·2421919	1·6086125	1·614	0·2080226	1·8767146	4260
4280	1·743	0·2413887	1·6102970	1·612	0·2072369	1·8786799	4280
4300	1·740	0·2405903	1·6119815	1·609	0·2064558	1·8806451	4300
4320	1·737	0·2397963	1·6136660	1·606	0·2056793	1·8826104	4320
4340	1·734	0·2390069	1·6153505	1·603	0·2049073	1·8845756	4340
4360	1·731	0·2382219	1·6170350	1·600	0·2041397	1·8865409	4360
4380	1·728	0·2374414	1·6187195	1·597	0·2033767	1·8885061	4380
4400	1·725	0·2366654	1·6204040	1·594	0·2026181	1·8904714	4400
4420	1·721	0·2358986	1·6220885	1·592	0·2018638	1·8924366	4420
4440	1·718	0·2351263	1·6237730	1·589	0·2011138	1·8944019	4440
4460	1·715	0·2343638	1·6254575	1·586	0·2003682	1·8963671	4460
4480	1·712	0·2336046	1·6271420	1·584	0·1996267	1·8983324	4480
4500	1·709	0·2328500	1·6288265	1·581	0·1988894	1·9002976	4500
4520	1·706	0·2320996	1·6305110	1·578	0·1981563	1·9022629	4520
4540	1·704	0·2313534	1·6321955	1·576	0·1974274	1·9042281	4540
4560	1·701	0·2306113	1·6338800	1·573	0·1967026	1·9061934	4560
4580	1·698	0·2298733	1·6355645	1·570	0·1959818	1·9081586	4580
4600	1·695	0·2291392	1·6372490	1·568	0·1952650	1·9101239	4600

Sine of Inclina- tion (1 over)	n = .050			Sine of Inclina- tion (1 over)	n = .009		
	N	log. N	D		log. N	D	N
8620	1.468	0.1658757	2.5911809	4620	0.5757312	.49168006	3.765
8640	1.460	0.1644562	2.5989884	4640	0.5748885	.49218541	3.757
8660	1.457	0.1635430	2.5967959	4660	0.5740499	.49269076	3.750
8680	1.454	0.1626861	2.5946084	4680	0.5732158	.49319611	3.743
8700	1.451	0.1617854	2.6024109	4700	0.5723845	.49370146	3.736
8720	1.448	0.1608410	2.6052184	4720	0.5715576	.49420681	3.729
8740	1.445	0.1599527	2.6080259	4740	0.5707345	.49471216	3.722
8760	1.442	0.1590704	2.6108334	4760	0.5699154	.49521751	3.715
8780	1.439	0.1581940	2.6136409	4780	0.5691002	.49572286	3.708
8800	1.437	0.1573236	2.6164484	4800	0.5682887	.49622821	3.701
8820	1.434	0.1564590	2.6192559	4820	0.5674809	.49673356	3.694
8840	1.431	0.1556002	2.6220634	4840	0.5666768	.49723891	3.687
8860	1.428	0.1547471	2.6248709	4860	0.5658763	.49774426	3.680
8880	1.425	0.1538997	2.6276784	4880	0.5650796	.49824961	3.673
8900	1.423	0.1530579	2.6304859	4900	0.5642865	.49875496	3.667
8920	1.420	0.1522111	2.6332934	4920	0.5634970	.49926031	3.660
8940	1.417	0.1513906	2.6361009	4940	0.5627111	.49976566	3.654
8960	1.414	0.1505651	2.6389084	4960	0.5619287	.50027101	3.647
8980	1.412	0.1497451	2.6417159	4980	0.5611497	.50077636	3.640
4000	1.409	0.1489304	2.6445234	5000	0.5603743	.50128171	3.634
4020	1.406	0.1481209	2.6473309	5040	0.5588337	.50229241	3.621
4040	1.404	0.1473167	2.6501384	5120	0.5557993	.50431381	3.596
4060	1.401	0.1465176	2.6529459	5200	0.5528055	.50633521	3.571
4080	1.399	0.1457235	2.6557534	5280	0.5498688	.50835661	3.539
4100	1.396	0.1449345	2.6585609	5360	0.5459817	.51037801	3.515
4120	1.394	0.1441505	2.6613684	5440	0.5431427	.51239941	3.493
4140	1.391	0.1433715	2.6641759	5520	0.5413502	.51442081	3.478
4160	1.389	0.1425973	2.6669834	5600	0.5386030	.51644221	3.456
4180	1.386	0.1418280	2.6697909	5680	0.5358998	.51846361	3.435
4200	1.384	0.1410635	2.6725984	5760	0.5332394	.52048501	3.414
4220	1.381	0.1403037	2.6754059	5840	0.5306206	.52250641	3.393
4240	1.379	0.1395487	2.6782134	5920	0.5280421	.52452781	3.373
4260	1.377	0.1387983	2.6810209	6000	0.5255029	.52654921	3.354
4280	1.374	0.1380525	2.6838284	6080	0.5230020	.52857061	3.334
4300	1.372	0.1373113	2.6866359	6160	0.5205385	.53059201	3.315
4320	1.370	0.1365747	2.6894434	6240	0.5181114	.53261341	3.297
4340	1.367	0.1358425	2.6922509	6320	0.5157196	.53463481	3.279
4360	1.365	0.1351148	2.6950584	6400	0.5133622	.53665621	3.261
4380	1.363	0.1343915	2.6978659	6480	0.5110384	.53867761	3.244
4400	1.360	0.1336725	2.7006734	6560	0.5087474	.54069901	3.227
4420	1.358	0.1329579	2.7034809	6640	0.5064884	.54272041	3.210
4440	1.356	0.1322476	2.7062884	6720	0.5042605	.54474181	3.193
4460	1.354	0.1315415	2.7090959	6800	0.5020631	.54676321	3.177
4480	1.352	0.1308395	2.7119034	6880	0.4998955	.54878461	3.162
4500	1.349	0.1311428	2.7147109	6960	0.4977570	.55080601	3.146
4520	1.347	0.1294480	2.7175184	7000	0.4966983	.55181671	3.138
4540	1.345	0.1287584	2.7203259	7040	0.4956475	.55282741	3.131
4560	1.343	0.1280729	2.7231334	7120	0.4935641	.55484881	3.116
4580	1.341	0.1273914	2.7259409	7200	0.4915086	.55687021	3.101
4600	1.339	0.1267138	2.7287484	7280	0.4894797	.55889161	3.087

Sine of Inclina- tion (1 over)	$n = \cdot 010$			$n = \cdot 011$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	3·469	0·5401556	·54681118	3·226	0·5087116	·60094229	4620
4640	3·462	0·5393210	·54687268	3·220	0·5078848	·60155994	4640
4660	3·455	0·5384905	·54748418	3·214	0·5070620	·60217759	4660
4680	3·449	0·5376640	·54799568	3·208	0·5062433	·60279524	4680
4700	3·442	0·5368414	·54855718	3·202	0·5054284	·60341289	4700
4720	3·436	0·5360226	·54911868	3·196	0·5046174	·60403054	4720
4740	3·429	0·5352077	·54968018	3·190	0·5038102	·60464819	4740
4760	3·423	0·5343966	·55024168	3·184	0·5030069	·60526584	4760
4780	3·417	0·5335895	·55080318	3·178	0·5022074	·60588349	4780
4800	3·410	0·5327861	·55136468	3·173	0·5014118	·60650114	4800
4820	3·404	0·5319864	·55192618	3·167	0·5006199	·60711879	4820
4840	3·397	0·5311904	·55248768	3·161	0·4998316	·60773644	4840
4860	3·392	0·5303981	·55304918	3·155	0·4990470	·60835409	4860
4880	3·385	0·5296094	·55361068	3·150	0·4982660	·60897174	4880
4900	3·379	0·5288244	·55417218	3·144	0·4974887	·60958939	4900
4920	3·373	0·5280430	·55473368	3·138	0·4967150	·61020704	4920
4940	3·367	0·5272651	·55529518	3·133	0·4959449	·61082469	4940
4960	3·361	0·5264907	·55585668	3·127	0·4951782	·61144234	4960
4980	3·355	0·5257198	·55641818	3·122	0·4944150	·61205999	4980
5000	3·349	0·5249525	·55697968	3·117	0·4936554	·61267764	5000
5040	3·338	0·5234281	·55810268	3·106	0·4921463	·61391294	5040
5120	3·315	0·5204199	·56034868	3·084	0·4891688	·61338354	5120
5200	3·292	0·5174643	·56259468	3·064	0·4862438	·61885414	5200
5280	3·270	0·5145597	·56484068	3·043	0·4833698	·62132474	5280
5360	3·249	0·5117046	·56708668	3·024	0·4805452	·62379534	5360
5440	3·228	0·5088975	·56933268	3·004	0·4777687	·62626594	5440
5520	3·207	0·5061369	·57157868	2·986	0·4750386	·62873654	5520
5600	3·187	0·5034215	·57382468	2·967	0·4723536	·63120714	5600
5680	3·168	0·5007501	·57607068	2·949	0·4697124	·63367774	5680
5760	3·149	0·4981214	·57831668	2·932	0·4671140	·63614834	5760
5840	3·130	0·4955343	·58056268	2·914	0·4645570	·63861894	5840
5920	3·112	0·4929874	·58280868	2·898	0·4620408	·64108954	5920
6000	3·094	0·4904799	·58505468	2·881	0·4595628	·64356014	6000
6080	3·076	0·4880105	·58730068	2·865	0·4571235	·64603074	6080
6160	3·059	0·4855784	·58954668	2·849	0·4547213	·64850134	6160
6240	3·042	0·4831826	·59179268	2·834	0·4523553	·65097194	6240
6320	3·026	0·4808221	·59403868	2·819	0·4500247	·65344254	6320
6400	3·010	0·4784960	·59628468	2·804	0·4477233	·65591314	6400
6480	2·994	0·4762034	·59853068	2·789	0·4454655	·65838374	6480
6560	2·978	0·4739436	·60077668	2·775	0·4432354	·66085434	6560
6640	2·963	0·4717157	·60302268	2·761	0·4410870	·66332494	6640
6720	2·948	0·4695189	·60526868	2·747	0·4388898	·66579554	6720
6800	2·933	0·4673528	·60751468	2·734	0·4367329	·66826614	6800
6880	2·919	0·4652160	·60976068	2·720	0·4346527	·67073674	6880
6960	2·905	0·4631083	·61200668	2·707	0·4325474	·67320734	6960
7000	2·898	0·4620650	·61312968	2·701	0·4315188	·67444264	7000
7040	2·891	0·4610288	·61425268	2·695	0·4304972	·67567794	7040
7120	2·877	0·4589770	·61649868	2·682	0·4284746	·67814854	7120
7200	2·864	0·4569524	·61874468	2·670	0·4264792	·68061914	7200
7280	2·851	0·4549541	·62099068	2·658	0·4245102	·68308974	7280

Sine of Inclina- tion (1 over)	n = .012			n = .013			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	3.024	0.4806488	65557841	2.854	0.4553995	71020453	4620
4640	3.019	0.4798094	65624721	2.848	0.4545872	71093448	4640
4660	3.012	0.4789142	65692101	2.843	0.4537790	71166443	4660
4680	3.007	0.4781929	65759481	2.838	0.4529747	71239488	4680
4700	3.002	0.4773954	65826861	2.833	0.4521743	71312433	4700
4720	2.996	0.4765918	65894241	2.827	0.4513778	71385428	4720
4740	2.991	0.4757920	65961621	2.822	0.4505851	71458423	4740
4760	2.985	0.4749961	66029001	2.817	0.4497963	71531418	4760
4780	2.980	0.4742041	66096381	2.812	0.4490114	71604413	4780
4800	2.975	0.4734158	66163761	2.807	0.4482302	71677408	4800
4820	2.969	0.4726312	66231141	2.802	0.4474527	71750403	4820
4840	2.964	0.4718503	66298521	2.797	0.4466788	71823398	4840
4860	2.959	0.4710730	66365901	2.792	0.4459086	71896393	4860
4880	2.953	0.4702994	66433281	2.787	0.4451421	71969388	4880
4900	2.948	0.4695295	66500661	2.782	0.4443792	72042383	4900
4920	2.943	0.4687632	66568041	2.777	0.4436199	72115378	4920
4940	2.938	0.4680004	66635421	2.772	0.4428642	72188373	4940
4960	2.933	0.4672411	66702801	2.768	0.4421119	72261368	4960
4980	2.927	0.4664853	66770181	2.763	0.4413631	72334363	4980
5000	2.922	0.4657380	66837561	2.758	0.4406178	72407358	5000
5040	2.912	0.4642386	66972321	2.749	0.4391375	72553348	5040
5120	2.893	0.4612905	67241841	2.730	0.4362174	72845328	5120
5200	2.873	0.4583948	67511361	2.712	0.4333497	73137308	5200
5280	2.855	0.4555500	67780881	2.695	0.4305328	73429288	5280
5360	2.836	0.4527546	68050401	2.678	0.4277652	73721268	5360
5440	2.818	0.4500070	68319921	2.661	0.4250455	74013248	5440
5520	2.801	0.4473058	68589441	2.645	0.4223721	74305228	5520
5600	2.784	0.4446498	68858961	2.629	0.4197438	74597208	5600
5680	2.767	0.4420376	69128481	2.613	0.4171592	74889188	5680
5760	2.751	0.4394681	69398001	2.598	0.4146171	75181168	5760
5840	2.735	0.4368939	69667521	2.583	0.4121164	75473148	5840
5920	2.719	0.4344519	69937041	2.568	0.4096558	75765128	5920
6000	2.704	0.4320031	70206561	2.554	0.4072343	76057108	6000
6080	2.689	0.4295923	70476081	2.540	0.4048509	76349088	6080
6160	2.674	0.4272186	70745601	2.526	0.4025045	76641068	6160
6240	2.660	0.4248811	71015121	2.513	0.4001942	76933048	6240
6320	2.646	0.4225790	71284641	2.500	0.3979191	77225028	6320
6400	2.632	0.4203112	71554161	2.487	0.3956788	77517008	6400
6480	2.619	0.4180767	71823681	2.474	0.3934708	77808988	6480
6560	2.605	0.4158747	72093201	2.462	0.3912958	78100968	6560
6640	2.592	0.4137045	72362721	2.450	0.3891526	78392948	6640
6720	2.580	0.4115654	72632241	2.438	0.3870403	78684928	6720
6800	2.567	0.4094566	72901761	2.426	0.3849583	78976908	6800
6880	2.555	0.4073774	73171281	2.415	0.3829057	79268888	6880
6960	2.543	0.4053271	73440801	2.404	0.3808821	79560868	6960
7000	2.537	0.4043125	73575561	2.398	0.3798807	79706858	7000
7040	2.531	0.4033049	73710321	2.393	0.3788864	79852848	7040
7120	2.519	0.4013101	73979841	2.382	0.3769182	80144828	7120
7200	2.508	0.3993423	74249361	2.371	0.3749771	80436808	7200
7280	2.497	0.3974011	74518881	2.361	0.3730621	80728788	7280

FOR SPECIAL INCLINATIONS AND VALUES OF (n).



Sine of Inclination (1 over)	n = .014			n = .015			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
4620	2.707	0.4325237	.76488565	2.580	0.4116740	.81946676	4620
4640	2.702	0.4317182	.76562175	2.576	0.4108751	.82030901	4640
4660	2.697	0.4309168	.76640785	2.571	0.4100802	.82115126	4660
4680	2.692	0.4301193	.76719395	2.566	0.4092892	.82199351	4680
4700	2.687	0.4293257	.76798005	2.562	0.4085020	.82283576	4700
4720	2.684	0.4285359	.76876615	2.557	0.4077188	.82367801	4720
4740	2.678	0.4277500	.76955225	2.552	0.4069394	.82452026	4740
4760	2.673	0.4269680	.77033835	2.548	0.4061639	.82536251	4760
4780	2.668	0.4261899	.77112445	2.543	0.4053922	.82620476	4780
4800	2.663	0.4254155	.77191055	2.539	0.4046242	.82704701	4800
4820	2.659	0.4246447	.77269665	2.534	0.4038599	.82788926	4820
4840	2.654	0.4238775	.77348275	2.530	0.4030993	.82873151	4840
4860	2.649	0.4231141	.77426885	2.525	0.4023423	.82957376	4860
4880	2.645	0.4223543	.77505495	2.521	0.4015890	.83041601	4880
4900	2.640	0.4215982	.77584105	2.517	0.4008394	.83125826	4900
4920	2.635	0.4208457	.77662715	2.512	0.4000933	.83210051	4920
4940	2.631	0.4200967	.77741325	2.508	0.3993507	.83294276	4940
4960	2.626	0.4193512	.77819935	2.504	0.3986116	.83378501	4960
4980	2.622	0.4186091	.77898545	2.500	0.3978760	.83462726	4980
5000	2.617	0.4178705	.77977155	2.495	0.3971439	.83546951	5000
5040	2.609	0.4164037	.78134375	2.487	0.3956899	.83715401	5040
5120	2.591	0.4135104	.78448815	2.471	0.3928223	.84052301	5120
5200	2.574	0.4106694	.78763255	2.455	0.3900070	.84389201	5200
5280	2.558	0.4078792	.79077695	2.439	0.3872424	.84726101	5280
5360	2.542	0.4051333	.79392135	2.424	0.3845270	.85063001	5360
5440	2.526	0.4024452	.79706575	2.409	0.3818573	.85399901	5440
5520	2.511	0.3997983	.80021015	2.395	0.3792378	.85736801	5520
5600	2.496	0.3971964	.80335455	2.380	0.3766612	.86073701	5600
5680	2.481	0.3946331	.80649895	2.367	0.3741282	.86410601	5680
5760	2.467	0.3921224	.80964335	2.353	0.3716376	.86747501	5760
5840	2.453	0.3896479	.81278775	2.340	0.3691884	.87084401	5840
5920	2.439	0.3872135	.81593215	2.327	0.3667791	.87421301	5920
6000	2.426	0.3848182	.81907655	2.314	0.3644088	.87758201	6000
6080	2.412	0.3824609	.82222095	2.302	0.3620764	.88095101	6080
6160	2.400	0.3801406	.82536535	2.290	0.3597809	.88432001	6160
6240	2.387	0.3778563	.82850975	2.278	0.3575214	.88768901	6240
6320	2.375	0.3756071	.83165415	2.266	0.3552970	.89105801	6320
6400	2.363	0.3733921	.83479855	2.255	0.3531067	.89442701	6400
6480	2.351	0.3712103	.83794295	2.244	0.3509496	.89779601	6480
6560	2.339	0.3690610	.84108735	2.233	0.3488249	.90116501	6560
6640	2.328	0.3669435	.84423175	2.222	0.3467319	.90453401	6640
6720	2.317	0.3648569	.84737615	2.211	0.3446697	.90790301	6720
6800	2.306	0.3628003	.85052055	2.201	0.3426377	.91127201	6800
6880	2.295	0.3607734	.85366495	2.191	0.3406350	.91464101	6880
6960	2.284	0.3587751	.85680935	2.181	0.3386611	.91801001	6960
7000	2.279	0.3577865	.85838155	2.176	0.3376845	.91969451	7000
7040	2.274	0.3568048	.85995375	2.171	0.3367151	.92137901	7040
7120	2.264	0.3548619	.86309815	2.162	0.3347964	.92474801	7120
7200	2.254	0.3529460	.86624255	2.152	0.3329046	.92811701	7200
7280	2.244	0.3510562	.86938695	2.143	0.3310388	.93148601	7280

Sine of Inclina- tion (1 over)	n = .017			n = .020			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	2·371	0·3749891	·92872900	2·186	0·3296876	1·0926224	4620
4640	2·367	0·3742024	·92968355	2·132	0·3288675	1·0937454	4640
4660	2·363	0·3734197	·93063810	2·129	0·3281015	1·0948684	4660
4680	2·359	0·3726410	·93159285	2·125	0·3273894	1·0959914	4680
4700	2·354	0·3718661	·93254720	2·121	0·3266811	1·0971144	4700
4720	2·350	0·3710950	·93350175	2·118	0·3259286	1·0982374	4720
4740	2·346	0·3703278	·93445680	2·114	0·3250760	1·0993604	4740
4760	2·342	0·3695645	·93541085	2·110	0·3243292	1·1004834	4760
4780	2·338	0·3688050	·93636540	2·107	0·3235863	1·1016064	4780
4800	2·334	0·3680492	·93731995	2·103	0·3228471	1·1027294	4800
4820	2·330	0·3672971	·93827450	2·099	0·3221115	1·1038524	4820
4840	2·326	0·3665487	·93922905	2·096	0·3213796	1·1049754	4840
4860	2·322	0·3658039	·94018360	2·092	0·3206513	1·1060984	4860
4880	2·317	0·3649627	·94113815	2·089	0·3199267	1·1072214	4880
4900	2·314	0·3643252	·94209270	2·085	0·3192057	1·1083444	4900
4920	2·310	0·3635912	·94304725	2·082	0·3184881	1·1094674	4920
4940	2·306	0·3628608	·94400180	2·079	0·3177742	1·1105904	4940
4960	2·302	0·3621338	·94495635	2·075	0·3170637	1·1117134	4960
4980	2·298	0·3614103	·94591090	2·072	0·3163566	1·1128364	4980
5000	2·295	0·3606903	·94686545	2·068	0·3156530	1·1139594	5000
5040	2·287	0·3592606	·94877455	2·062	0·3142560	1·1162054	5040
5120	2·272	0·3564412	·95259275	2·049	0·3115022	1·1206974	5120
5200	2·258	0·3536740	·95641095	2·036	0·3088004	1·1251894	5200
5280	2·244	0·3509574	·96022915	2·024	0·3061489	1·1296814	5280
5360	2·230	0·3482899	·96404735	2·012	0·3035463	1·1341734	5360
5440	2·217	0·3456700	·96786555	2·000	0·3009911	1·1386654	5440
5520	2·203	0·3430962	·97168375	1·988	0·2984818	1·1431574	5520
5600	2·191	0·3405671	·97550195	1·977	0·2960171	1·1476494	5600
5680	2·178	0·3380815	·97932015	1·966	0·2935957	1·1521414	5680
5760	2·166	0·3356382	·98313835	1·955	0·2912164	1·1566334	5760
5840	2·154	0·3332361	·98695655	1·945	0·2888781	1·1611254	5840
5920	2·142	0·3308738	·99077475	1·935	0·2865794	1·1656174	5920
6000	2·131	0·3285504	·99459295	1·925	0·2843195	1·1701094	6000
6080	2·120	0·3262648	·99841115	1·915	0·2820972	1·1746014	6080
6160	2·109	0·3240160	1·0022293	1·905	0·2799114	1·1790934	6160
6240	2·098	0·3218030	1·0060475	1·896	0·2777614	1·1835854	6240
6320	2·087	0·3196249	1·0098657	1·886	0·2756461	1·1880774	6320
6400	2·077	0·3174809	1·0136839	1·877	0·2735646	1·1925694	6400
6480	2·067	0·3153700	1·0175021	1·869	0·2715160	1·1970614	6480
6560	2·057	0·3132914	1·0213203	1·860	0·2694996	1·2015534	6560
6640	2·048	0·3112443	1·0251385	1·851	0·2675145	1·2060454	6640
6720	2·038	0·3092279	1·0289567	1·843	0·2655600	1·2105374	6720
6800	2·029	0·3072415	1·0327749	1·835	0·2636353	1·2150294	6800
6880	2·020	0·3052844	1·0365931	1·827	0·2617397	1·2195214	6880
6960	2·011	0·3033559	1·0404113	1·819	0·2598725	1·2240134	6960
7000	2·006	0·3024021	1·0423204	1·815	0·2589493	1·2262594	7000
7040	2·002	0·3014552	1·0442295	1·811	0·2580330	1·2285054	7040
7120	1·993	0·2995818	1·0480477	1·804	0·2562205	1·2329974	7120
7200	1·985	0·2977350	1·0518659	1·797	0·2544345	1·2374894	7200
7280	1·977	0·2959144	1·0556841	1·789	0·2526745	1·2419814	7280

Sine of Inclina- tion (1 over)	$n = .0225$			$n = .0250$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	1.988	0.2984449	1.2292001	1.870	0.2717701	1.8657779	4620
4640	1.985	0.2976874	1.2304635	1.866	0.2710240	1.8671817	4640
4660	1.981	0.2969388	1.2317269	1.863	0.2702819	1.8685854	4660
4680	1.978	0.2961841	1.2329903	1.860	0.2695437	1.8699892	4680
4700	1.974	0.2954383	1.2342536	1.857	0.2688092	1.8713929	4700
4720	1.971	0.2946964	1.2355170	1.854	0.2680786	1.8727967	4720
4740	1.968	0.2939582	1.2367804	1.851	0.2673518	1.8742004	4740
4760	1.964	0.2932239	1.2380438	1.848	0.2666288	1.8756042	4760
4780	1.961	0.2924984	1.2393071	1.845	0.2659096	1.8770079	4780
4800	1.958	0.2917666	1.2405705	1.842	0.2651942	1.8784117	4800
4820	1.955	0.2910434	1.2418339	1.839	0.2644824	1.8798154	4820
4840	1.951	0.2903238	1.2430973	1.836	0.2637743	1.8812192	4840
4860	1.948	0.2896079	1.2443606	1.833	0.2630698	1.8826229	4860
4880	1.945	0.2888957	1.2456240	1.830	0.2623688	1.8840267	4880
4900	1.942	0.2881871	1.2468874	1.827	0.2616714	1.8854304	4900
4920	1.939	0.2874820	1.2481508	1.824	0.2609775	1.8868342	4920
4940	1.935	0.2867804	1.2494141	1.821	0.2602872	1.8882379	4940
4960	1.932	0.2860822	1.2506775	1.818	0.2596003	1.8896417	4960
4980	1.929	0.2853874	1.2519409	1.815	0.2589168	1.8910454	4980
5000	1.926	0.2846961	1.2532043	1.812	0.2582368	1.8924492	5000
5040	1.920	0.2838238	1.2557810	1.807	0.2568870	1.8952567	5040
5120	1.908	0.2806191	1.2607845	1.796	0.2542271	1.4008717	5120
5200	1.897	0.2779662	1.2658380	1.785	0.2516188	1.4064867	5200
5280	1.885	0.2753636	1.2709915	1.774	0.2490607	1.4121017	5280
5360	1.874	0.2728097	1.2759450	1.764	0.2465512	1.4177167	5360
5440	1.863	0.2703030	1.2810985	1.754	0.2440888	1.4233317	5440
5520	1.853	0.2678420	1.2860520	1.745	0.2416719	1.4289467	5520
5600	1.843	0.2654255	1.2911055	1.735	0.2392993	1.4345617	5600
5680	1.833	0.2630521	1.2961590	1.726	0.2369697	1.4401767	5680
5760	1.823	0.2607208	1.3012125	1.717	0.2346820	1.4457917	5760
5840	1.813	0.2584302	1.3062660	1.708	0.2324348	1.4514067	5840
5920	1.804	0.2561791	1.3113195	1.699	0.2302271	1.4570217	5920
6000	1.795	0.2539666	1.3163730	1.691	0.2280578	1.4626367	6000
6080	1.786	0.2517915	1.3214265	1.682	0.2259259	1.4682517	6080
6160	1.777	0.2496529	1.3264800	1.674	0.2238302	1.4738667	6160
6240	1.768	0.2475499	1.3315335	1.666	0.2217699	1.4794817	6240
6320	1.760	0.2454815	1.3365870	1.659	0.2197441	1.4850967	6320
6400	1.752	0.2434467	1.3416405	1.651	0.2177518	1.4907117	6400
6480	1.744	0.2414447	1.3466940	1.644	0.2157922	1.4963267	6480
6560	1.736	0.2394747	1.3517475	1.636	0.2138644	1.5019417	6560
6640	1.728	0.2375359	1.3568010	1.629	0.2119678	1.5075567	6640
6720	1.720	0.2356274	1.3618545	1.622	0.2101012	1.5131717	6720
6800	1.713	0.2337488	1.3669080	1.615	0.2082643	1.5187867	6800
6880	1.706	0.2318991	1.3719615	1.609	0.2064563	1.5244017	6880
6960	1.698	0.2300776	1.3770150	1.602	0.2046763	1.5300167	6960
7000	1.695	0.2291771	1.3795418	1.599	0.2037965	1.5328242	7000
7040	1.692	0.2282836	1.3820685	1.596	0.2029237	1.5356317	7040
7120	1.685	0.2265165	1.3871220	1.589	0.2011979	1.5412467	7120
7200	1.678	0.2247759	1.3921755	1.583	0.1994985	1.5468617	7200
7280	1.671	0.2230610	1.3972290	1.577	0.1978246	1.5524767	7280

Sine of Inclina- tion (1 over)	n = .0275			n = .030			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	1.778	0.2486369	1.5028557	1.692	0.2284092	1.6889885	4620
4640	1.770	0.2479211	1.5088999	1.689	0.2278832	1.6406180	4640
4660	1.767	0.2471895	1.5054440	1.686	0.2269612	1.6428025	4660
4680	1.764	0.2464617	1.5069381	1.684	0.2262431	1.6439870	4680
4700	1.761	0.2457877	1.5035822	1.681	0.2255288	1.6456715	4700
4720	1.758	0.2450176	1.5100764	1.678	0.2248182	1.6478560	4720
4740	1.755	0.2448018	1.5116205	1.675	0.2241114	1.6490405	4740
4760	1.752	0.2435888	1.5181646	1.673	0.2234085	1.6507250	4760
4780	1.749	0.2428800	1.5147087	1.670	0.2227094	1.6524095	4780
4800	1.747	0.2421747	1.5162529	1.667	0.2220140	1.6540940	4800
4820	1.744	0.2414785	1.5177970	1.665	0.2218221	1.6557785	4820
4840	1.741	0.2407757	1.5193411	1.662	0.2206888	1.6574630	4840
4860	1.738	0.2400816	1.5208852	1.659	0.2199492	1.6591475	4860
4880	1.735	0.2393910	1.5224294	1.657	0.2192682	1.6608320	4880
4900	1.733	0.2387040	1.5239735	1.654	0.2185907	1.6625165	4900
4920	1.730	0.2380205	1.5255176	1.652	0.2179167	1.6642010	4920
4940	1.727	0.2373405	1.5270617	1.649	0.2172468	1.6658855	4940
4960	1.725	0.2366640	1.5286059	1.646	0.2165592	1.6675700	4960
4980	1.722	0.2359908	1.5301500	1.644	0.2159156	1.6692545	4980
5000	1.719	0.2353211	1.5316941	1.642	0.2152554	1.6709390	5000
5040	1.714	0.2339919	1.5347824	1.637	0.2139451	1.6748080	5040
5120	1.704	0.2318781	1.5409589	1.627	0.2113641	1.6810460	5120
5200	1.694	0.2288058	1.5471354	1.617	0.2088845	1.6877840	5200
5280	1.684	0.2268885	1.5533119	1.608	0.2068546	1.6945220	5280
5360	1.674	0.2238196	1.5594884	1.599	0.2039231	1.7012600	5360
5440	1.665	0.2213976	1.5656649	1.591	0.2015384	1.7079980	5440
5520	1.656	0.2190211	1.5718414	1.582	0.1991990	1.7147360	5520
5600	1.647	0.2166888	1.5780178	1.574	0.1969086	1.7214740	5600
5680	1.638	0.2143993	1.5841944	1.565	0.1946510	1.7282120	5680
5760	1.630	0.2121515	1.5903709	1.558	0.1924399	1.7349500	5760
5840	1.622	0.2099442	1.5965474	1.550	0.1902692	1.7416880	5840
5920	1.614	0.2077761	1.6027239	1.542	0.1881875	1.7484260	5920
6000	1.606	0.2056468	1.6089004	1.535	0.1860439	1.7551640	6000
6080	1.598	0.2035537	1.6150769	1.528	0.1839874	1.7619020	6080
6160	1.590	0.2014973	1.6212584	1.520	0.1819670	1.7686400	6160
6240	1.583	0.1994761	1.6274299	1.513	0.1799817	1.7753780	6240
6320	1.576	0.1974892	1.6336064	1.507	0.1780306	1.7821160	6320
6400	1.569	0.1955358	1.6397829	1.500	0.1761128	1.7888540	6400
6480	1.562	0.1936149	1.6459594	1.494	0.1742274	1.7955920	6480
6560	1.555	0.1917257	1.6521359	1.487	0.1723735	1.8023300	6560
6640	1.548	0.1898674	1.6583124	1.481	0.1705504	1.8090680	6640
6720	1.542	0.1880392	1.6644889	1.475	0.1687573	1.8158060	6720
6800	1.535	0.1862404	1.6706654	1.469	0.1669985	1.8225440	6800
6880	1.529	0.1844704	1.6768419	1.463	0.1652584	1.8292820	6880
6960	1.523	0.1827284	1.6830184	1.457	0.1635511	1.8360200	6960
7000	1.520	0.1818675	1.6861066	1.454	0.1627074	1.8393890	7000
7040	1.517	0.1810136	1.6891949	1.452	0.1618709	1.8427580	7040
7120	1.511	0.1793258	1.6953714	1.446	0.1602171	1.8494960	7120
7200	1.505	0.1776834	1.7015479	1.441	0.1585895	1.8562340	7200
7280	1.500	0.1760268	1.7077244	1.435	0.1569871	1.8629720	7280

Sine of Inclina- tion (1 over)	$n = .035$			$n = .050$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
4620	1.565	0.1945521	1.9120891	1.837	0.1260402	2.7815559	4620
4640	1.568	0.1988433	1.9140544	1.835	0.1253705	2.7848684	4640
4660	1.560	0.1981884	1.9160196	1.833	0.1247048	2.7871709	4660
4680	1.558	0.1924875	1.9179849	1.831	0.1240429	2.7899784	4680
4700	1.555	0.1917408	1.9199501	1.829	0.1233847	2.7927859	4700
4720	1.553	0.1910469	1.9219154	1.827	0.1227302	2.7955934	4720
4740	1.550	0.1903572	1.9238806	1.825	0.1220795	2.7984009	4740
4760	1.548	0.1896713	1.9258459	1.823	0.1214295	2.7512084	4760
4780	1.545	0.1889898	1.9278111	1.821	0.1207893	2.7540159	4780
4800	1.543	0.1883109	1.9297764	1.819	0.1201497	2.7568234	4800
4820	1.540	0.1876361	1.9317416	1.817	0.1195136	2.7596309	4820
4840	1.538	0.1869648	1.9337069	1.815	0.1188811	2.7624384	4840
4860	1.536	0.1862972	1.9356721	1.813	0.1182521	2.7652459	4860
4880	1.533	0.1856331	1.9376374	1.811	0.1176266	2.7680534	4880
4900	1.531	0.1849726	1.9396026	1.809	0.1170047	2.7708609	4900
4920	1.529	0.1843156	1.9415679	1.807	0.1163862	2.7736684	4920
4940	1.526	0.1836621	1.9435331	1.805	0.1157712	2.7764759	4940
4960	1.524	0.1830119	1.9454984	1.804	0.1151595	2.7792834	4960
4980	1.522	0.1823651	1.9474636	1.802	0.1145511	2.7820909	4980
5000	1.520	0.1817218	1.9494289	1.800	0.1139461	2.7848984	5000
5040	1.515	0.1804452	1.95333594	1.296	0.1127460	2.7905184	5040
5120	1.506	0.1779314	1.9612204	1.289	0.1103848	2.8017434	5120
5200	1.498	0.1754687	1.9690814	1.283	0.1080741	2.8129734	5200
5280	1.490	0.1730555	1.9769424	1.276	0.1058122	2.8242034	5280
5360	1.481	0.1706904	1.9848034	1.269	0.1035977	2.8354334	5360
5440	1.474	0.1683718	1.9926644	1.263	0.1014290	2.8466634	5440
5520	1.466	0.1660988	2.0005254	1.257	0.0993047	2.8578934	5520
5600	1.458	0.1638685	2.0083864	1.251	0.0972235	2.8691234	5600
5680	1.451	0.1616811	2.0162474	1.245	0.0951841	2.8803534	5680
5760	1.444	0.1595350	2.0241084	1.239	0.0931853	2.8915834	5760
5840	1.437	0.1574291	2.0319694	1.234	0.0912260	2.9028134	5840
5920	1.430	0.1553620	2.0398304	1.228	0.0893048	2.9140434	5920
6000	1.423	0.1533328	2.0476914	1.223	0.0874209	2.9252734	6000
6080	1.416	0.1513404	2.0555524	1.218	0.0855732	2.9365034	6080
6160	1.411	0.1493838	2.0634134	1.213	0.0837606	2.9477334	6160
6240	1.404	0.1474621	2.0712744	1.208	0.0819823	2.9589634	6240
6320	1.398	0.1455743	2.0791354	1.203	0.0802373	2.9701934	6320
6400	1.392	0.1437195	2.0869964	1.198	0.0785247	2.9814234	6400
6480	1.386	0.1418969	2.0948574	1.194	0.0768436	2.9926534	6480
6560	1.381	0.1401056	2.1027184	1.189	0.0751982	2.9038834	6560
6640	1.375	0.1383449	2.1105794	1.185	0.0735728	2.9151134	6640
6720	1.370	0.1366139	2.1184404	1.180	0.0719815	2.9263434	6720
6800	1.364	0.1349120	2.1263014	1.176	0.0704187	2.9375734	6800
6880	1.359	0.1332385	2.1341624	1.172	0.0688837	2.9488034	6880
6960	1.354	0.1315925	2.1420234	1.168	0.0673756	2.9600334	6960
7000	1.351	0.1307796	2.1459539	1.166	0.0666314	2.9656484	7000
7040	1.349	0.1299734	2.1498844	1.164	0.0658938	2.9712634	7040
7120	1.344	0.1283806	2.1577454	1.160	0.0644377	2.9824934	7120
7200	1.339	0.1268136	2.1656064	1.156	0.0630069	2.9937234	7200
7280	1.334	0.1253118	2.1734674	1.152	0.0616007	3.0049534	7280

Sine of Inclina- tion (1 over)	n = .009			n = .010			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7360	3·072	0·4874769	5·6091301	2·838	0·4529818	·62323668	7360
7440	3·058	0·4854994	5·6298441	2·825	0·4510348	·62548268	7440
7500	3·048	0·4840822	5·6445046	2·816	0·4495907	·62716718	7500
7520	3·045	0·4835464	5·6495581	2·813	0·4491124	·62772868	7520
7600	3·031	0·4816177	5·6697721	2·800	0·4472143	·62997468	7600
7680	3·018	0·4797128	5·6899861	2·788	0·4553899	·63222068	7680
7760	3·005	0·4778311	5·7102001	2·776	0·4434886	·63446668	7760
7840	2·992	0·4759723	5·7304141	2·765	0·4416600	·63671268	7840
7920	2·979	0·4741359	5·7506281	2·753	0·4398537	·63895868	7920
8000	2·967	0·4723212	5·7708421	2·742	0·4380690	·64120468	8000
8080	2·955	0·4705279	5·7910561	2·731	0·4363060	·64345068	8080
8160	2·943	0·4687556	5·8112701	2·720	0·4345638	·64569668	8160
8240	2·931	0·4670039	5·8314841	2·709	0·4328421	·64794268	8240
8320	2·919	0·4652723	5·8516981	2·699	0·4311405	·65018868	8320
8400	2·908	0·4635606	5·8719121	2·688	0·4294587	·65243468	8400
8480	2·896	0·4618681	5·8921261	2·678	0·4277961	·65468068	8480
8560	2·885	0·4601946	5·9123401	2·668	0·4261524	·65692668	8560
8640	2·874	0·4585398	5·9325541	2·658	0·4245274	·65917268	8640
8720	2·864	0·4569034	5·9527681	2·648	0·4229208	·66141868	8720
8800	2·853	0·4552850	5·9729821	2·638	0·4213320	·66366468	8800
8880	2·842	0·4536841	5·9931961	2·629	0·4197608	·66591068	8880
8960	2·832	0·4521007	6·0134101	2·619	0·4182069	·66815668	8960
9000	2·827	0·4513152	6·0235171	2·615	0·4174362	·66927968	9000
9040	2·822	0·4505342	6·0336241	2·610	0·4166699	·67040268	9040
9120	2·812	0·4489843	6·0538381	2·601	0·4151485	·67264868	9120
9200	2·802	0·4474509	6·0740521	2·592	0·4136455	·67489468	9200
9280	2·792	0·4459336	6·0942661	2·583	0·4121576	·67714068	9280
9360	2·782	0·4444322	6·1144801	2·574	0·4106855	·67938668	9360
9440	2·773	0·4429463	6·1346941	2·566	0·4092289	·68163268	9440
9520	2·764	0·4414758	6·1549081	2·557	0·4077875	·68387868	9520
9600	2·754	0·4400201	6·1751221	2·549	0·4063610	·68612468	9600
9680	2·745	0·4385794	6·1953361	2·541	0·4049494	·68837068	9680
9760	2·736	0·4371532	6·2155501	2·533	0·4035522	·69061668	9760
9840	2·727	0·4357413	6·2357641	2·524	0·4021693	·69286268	9840
9920	2·719	0·4343434	6·2559781	2·517	0·4008004	·69510868	9920
10000	2·710	0·4329593	6·2761921	2·509	0·3994452	·69735468	10000
10080	2·701	0·4315888	6·2964061	2·501	0·3981035	·69960068	10080
10160	2·693	0·4302317	6·3166201	2·493	0·3967752	·70184668	10160
10240	2·685	0·4288878	6·3368341	2·486	0·3954601	·70409268	10240
10320	2·676	0·4275568	6·3570481	2·478	0·3941578	·70633868	10320
10400	2·668	0·4262386	6·3772621	2·471	0·3928682	·70858468	10400
10480	2·660	0·4249329	6·3974761	2·464	0·3915911	·71083068	10480
10560	2·652	0·4236396	6·4176901	2·457	0·3903264	·71307668	10560
10640	2·645	0·4223586	6·4379041	2·449	0·3890738	·71532268	10640
10720	2·637	0·4210895	6·4581181	2·442	0·3878331	·71756868	10720
10800	2·629	0·4198321	6·4783321	2·436	0·3866042	·71981468	10800
10880	2·622	0·4185864	6·4985461	2·429	0·3853869	·72206068	10880
10960	2·614	0·4173521	6·5187601	2·422	0·3841809	·72430668	10960
11000	2·611	0·4167391	6·5288671	2·419	0·3835821	·72542968	11000
11040	2·607	0·4161290	6·5389741	2·415	0·3829861	·72655268	11040

Sine of Inclina- tion (1 over)	<i>n</i> = .011			<i>n</i> = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7860	2.646	0.4225670	.68556034	2.486	0.3954856	.74788401	7860
7440	2.634	0.4206490	.68803094	2.475	0.3935952	.75057921	7440
7500	2.628	0.4192268	.68988389	2.467	0.3921936	.75260061	7500
7520	2.623	0.4187555	.69050154	2.465	0.3917294	.75327441	7520
7600	2.611	0.4168862	.69297214	2.454	0.3898876	.75596961	7600
7680	2.600	0.4150407	.69544274	2.444	0.3880695	.75866481	7680
7760	2.590	0.4132183	.69791834	2.434	0.3862744	.76136001	7760
7840	2.579	0.4114185	.70088394	2.424	0.3845020	.76405521	7840
7920	2.568	0.4096410	.70285454	2.414	0.3827518	.76675041	7920
8000	2.558	0.4078851	.70532514	2.404	0.3810232	.76944561	8000
8080	2.548	0.4061505	.70779574	2.395	0.3793158	.77214081	8080
8160	2.538	0.4044368	.71026634	2.386	0.3776292	.77483601	8160
8240	2.528	0.4027437	.71273694	2.377	0.3759631	.77753121	8240
8320	2.518	0.4010705	.71520754	2.368	0.3743169	.78022641	8320
8400	2.509	0.3994171	.71767814	2.359	0.3726904	.78292161	8400
8480	2.499	0.3977828	.72014874	2.350	0.3710831	.78561681	8480
8560	2.490	0.3961674	.72261934	2.342	0.3694946	.78831201	8560
8640	2.481	0.3945707	.72508994	2.333	0.3679246	.79100721	8640
8720	2.472	0.3929923	.72756054	2.325	0.3663728	.79370241	8720
8800	2.463	0.3914316	.73003114	2.317	0.3648388	.79639761	8800
8880	2.454	0.3898883	.73250174	2.308	0.3633222	.79909281	8880
8960	2.445	0.3883624	.73497234	2.301	0.3618229	.80178801	8960
9000	2.441	0.38776057	.73620764	2.297	0.3610795	.80313561	9000
9040	2.437	0.3868534	.73744294	2.293	0.3603404	.80448321	9040
9120	2.429	0.3853609	.73991354	2.285	0.3588744	.80717841	9120
9200	2.420	0.3838847	.74238414	2.277	0.3574247	.80987361	9200
9280	2.412	0.3824246	.74485474	2.270	0.3559910	.81256881	9280
9360	2.404	0.3809803	.74732534	2.262	0.3545730	.81526401	9360
9440	2.396	0.3795514	.74979594	2.255	0.3531703	.81795921	9440
9520	2.389	0.3781377	.75226654	2.248	0.3517827	.82065441	9520
9600	2.381	0.3767388	.75473714	2.241	0.3504100	.82334961	9600
9680	2.373	0.3753548	.75720774	2.234	0.3490521	.82604481	9680
9760	2.366	0.3739852	.75967834	2.227	0.3477085	.82874001	9760
9840	2.358	0.3726295	.76214894	2.220	0.3463790	.83143521	9840
9920	2.351	0.3712880	.76461954	2.213	0.3450634	.83413041	9920
10000	2.344	0.3699602	.76709014	2.207	0.3437614	.83682561	10000
10080	2.337	0.3686458	.76956074	2.200	0.3424729	.83952081	10080
10160	2.330	0.3673447	.77203134	2.194	0.3411977	.84221601	10160
10240	2.323	0.3660568	.77450194	2.187	0.3399355	.84491121	10240
10320	2.316	0.3647817	.77697254	2.181	0.3386860	.84760641	10320
10400	2.310	0.3635192	.77944314	2.175	0.3374491	.85030161	10400
10480	2.303	0.3622691	.78191374	2.169	0.3362246	.85299681	10480
10560	2.296	0.3610313	.78438434	2.163	0.3350124	.85569201	10560
10640	2.290	0.3598057	.78685494	2.157	0.3338123	.85838721	10640
10720	2.283	0.3585919	.78932554	2.151	0.3326240	.86108241	10720
10800	2.277	0.3573898	.79179614	2.145	0.3314473	.86377761	10800
10880	2.271	0.3561993	.79426674	2.139	0.3302822	.86647281	10880
10960	2.265	0.3550201	.79673734	2.134	0.3291282	.86916801	10960
11000	2.262	0.3544346	.79797264	2.131	0.3285554	.87051561	11000
11040	2.259	0.35388519	.79920794	2.128	0.3279854	.87186321	11040

Sine of Inclina- tion (1 over)	n = .013			n = .014			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7360	2·351	0·8711730	·81020768	2·285	0·8491928	·87253185	7360
7440	2·341	0·8698089	·81812748	2·225	0·8473533	·87567575	7440
7500	2·333	0·8679270	·81531733	2·218	0·8459901	·87803405	7500
7520	2·331	0·8674693	·81604728	2·216	0·8455388	·87882015	7520
7600	2·321	0·8656538	·81896708	2·205	0·8437482	·88196455	7600
7680	2·311	0·8638618	·82188688	2·198	0·8419811	·88510895	7680
7760	2·302	0·8620928	·82480668	2·189	0·8402369	·88825335	7760
7840	2·293	0·8603463	·82772648	2·180	0·8385153	·89139775	7840
7920	2·284	0·8586220	·83064628	2·172	0·8368158	·89454215	7920
8000	2·275	0·8569193	·83356608	2·163	0·8351378	·89768655	8000
8080	2·266	0·8552378	·83648588	2·155	0·8334809	·90083095	8080
8160	2·257	0·8535771	·83940568	2·147	0·8318447	·90397585	8160
8240	2·249	0·8519367	·84232548	2·139	0·8302288	·90711975	8240
8320	2·240	0·8503162	·84524528	2·131	0·8286328	·91026415	8320
8400	2·232	0·8487154	·84816508	2·124	0·8270564	·91340855	8400
8480	2·224	0·8471337	·85108488	2·116	0·8254990	·91655295	8480
8560	2·216	0·8455707	·85400468	2·108	0·8239603	·91969735	8560
8640	2·208	0·8440262	·85692448	2·101	0·8224400	·92284175	8640
8720	2·200	0·8424998	·85984428	2·094	0·8209379	·92598615	8720
8800	2·193	0·8409911	·86276408	2·087	0·8194534	·92913055	8800
8880	2·185	0·8394998	·86568388	2·080	0·8179862	·93227495	8880
8960	2·178	0·8380258	·86860368	2·073	0·8165361	·93541935	8960
9000	2·174	0·8372950	·87006358	2·069	0·8158173	·93699155	9000
9040	2·170	0·8365685	·87152348	2·066	0·8151028	·93856375	9040
9120	2·163	0·8351277	·87444328	2·059	0·8136859	·94170815	9120
9200	2·156	0·8337031	·87736308	2·053	0·8122852	·94485255	9200
9280	2·149	0·8322944	·88028288	2·046	0·8109008	·94799695	9280
9360	2·142	0·8309014	·88320268	2·040	0·8095310	·95114135	9360
9440	2·136	0·8295237	·88612248	2·033	0·8081769	·95428575	9440
9520	2·129	0·8281610	·88904228	2·027	0·8068379	·95748015	9520
9600	2·122	0·8268131	·89196208	2·021	0·8055137	·96057455	9600
9680	2·116	0·8254799	·89488188	2·015	0·8042041	·96371895	9680
9760	2·110	0·8241610	·89780168	2·009	0·8029087	·96686335	9760
9840	2·103	0·8228562	·90072148	2·003	0·8016273	·97000775	9840
9920	2·097	0·8215652	·90364128	1·997	0·8003597	·97315215	9920
10000	2·091	0·8202878	·90656108	1·991	0·2991057	·97629655	10000
10080	2·085	0·8190238	·90948088	1·985	0·2978650	·97944095	10080
10160	2·079	0·8177730	·91240068	1·980	0·2966375	·98258535	10160
10240	2·073	0·8165352	·91532048	1·974	0·2954229	·98572975	10240
10320	2·067	0·8153102	·91824028	1·969	0·2942209	·98887415	10320
10400	2·061	0·8140976	·92116008	1·964	0·2930315	·99201855	10400
10480	2·055	0·8128975	·92407988	1·958	0·2918545	·99516295	10480
10560	2·050	0·8117094	·92699968	1·953	0·2906894	·99830735	10560
10640	2·044	0·8105335	·92991948	1·948	0·2895364	1·0014517	10640
10720	2·039	0·8093693	·93283928	1·943	0·2883950	1·0045961	10720
10800	2·033	0·8082167	·93575908	1·938	0·2872652	1·0077405	10800
10880	2·028	0·8070756	·93867888	1·933	0·2861468	1·0108849	10880
10960	2·023	0·8059456	·94159868	1·928	0·2850396	1·0140293	10960
11000	2·020	0·8053848	·94305858	1·925	0·2844901	1·0156015	11000
11040	2·018	0·8048267	·94451848	1·923	0·2839434	1·0171737	11040

Sine of Inclina- tion (1 over)	$n = \cdot 015$			$n = \cdot 017$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7360	2.184	0.8291988	93485501	1.968	0.2941193	1.0595023	7360
7440	2.125	0.8273837	93822401	1.960	0.2923490	1.0633205	7440
7500	2.119	0.8260384	94075076	1.955	0.2910372	1.0661842	7500
7520	2.116	0.8255930	94159301	1.953	0.2906029	1.0671387	7520
7600	2.108	0.8238268	94498201	1.945	0.2888807	1.0709569	7600
7680	2.099	0.8220830	94833101	1.937	0.2871819	1.0747751	7680
7760	2.091	0.8203626	95170001	1.930	0.2855058	1.0785933	7760
7840	2.083	0.8186646	95506901	1.922	0.2838520	1.0824115	7840
7920	2.075	0.8169887	95843801	1.915	0.2822201	1.0862297	7920
8000	2.067	0.8153342	96180701	1.908	0.2806096	1.0900479	8000
8080	2.059	0.8137008	96517601	1.901	0.2790201	1.0938661	8080
8160	2.052	0.8120881	96854501	1.894	0.2774511	1.0976843	8160
8240	2.044	0.8104956	97191401	1.888	0.2759023	1.1015025	8240
8320	2.037	0.8089229	97528301	1.881	0.2743731	1.1053207	8320
8400	2.029	0.8073697	97865201	1.874	0.2728633	1.1091389	8400
8480	2.022	0.8058355	98202101	1.868	0.2713724	1.1129571	8480
8560	2.015	0.8043200	98539001	1.862	0.2699001	1.1167753	8560
8640	2.008	0.8028229	98875901	1.855	0.2684461	1.1205935	8640
8720	2.001	0.8013438	99212801	1.849	0.2670100	1.1244117	8720
8800	1.995	0.2998823	99549701	1.843	0.2655914	1.1282299	8800
8880	1.988	0.2984381	99886601	1.837	0.2641899	1.1320481	8880
8960	1.982	0.2970109	1.0022350	1.831	0.2628054	1.1358663	8960
9000	1.978	0.2963035	1.0039195	1.829	0.2621193	1.1377754	9000
9040	1.975	0.2956004	1.0056040	1.826	0.2614375	1.1396845	9040
9120	1.969	0.2942062	1.0089730	1.820	0.2600859	1.1435027	9120
9200	1.963	0.2928282	1.0123420	1.814	0.2587502	1.1473209	9200
9280	1.956	0.2914660	1.0157110	1.809	0.2574302	1.1511391	9280
9360	1.950	0.2901194	1.0190800	1.804	0.2561257	1.1549573	9360
9440	1.944	0.2887879	1.0224490	1.798	0.2548363	1.1587755	9440
9520	1.939	0.2874714	1.0258180	1.793	0.2535617	1.1625937	9520
9600	1.933	0.2861696	1.0291870	1.788	0.2523017	1.1664119	9600
9680	1.927	0.2848824	1.0325560	1.783	0.2510562	1.1702301	9680
9760	1.921	0.2836094	1.0359250	1.778	0.2498248	1.1740483	9760
9840	1.916	0.2823504	1.0392940	1.773	0.2486073	1.1778665	9840
9920	1.910	0.2811050	1.0426630	1.768	0.2474034	1.1816847	9920
10000	1.905	0.2798732	1.0460320	1.763	0.2462129	1.1855029	10000
10080	1.900	0.2786547	1.0494010	1.758	0.2450356	1.1893211	10080
10160	1.894	0.2774492	1.0527700	1.753	0.2438713	1.1931393	10160
10240	1.889	0.2762567	1.0561390	1.749	0.2427198	1.1969575	10240
10320	1.884	0.2750767	1.0595080	1.744	0.2415808	1.2007757	10320
10400	1.879	0.2739093	1.0628770	1.740	0.2404541	1.2045939	10400
10480	1.873	0.2727541	1.0662460	1.735	0.2393395	1.2084121	10480
10560	1.869	0.2716109	1.0696150	1.731	0.2382370	1.2122303	10560
10640	1.864	0.2704797	1.0729840	1.726	0.2371463	1.2160485	10640
10720	1.859	0.2693600	1.0763530	1.722	0.2360671	1.2198667	10720
10800	1.855	0.2682519	1.0797220	1.718	0.2349993	1.2236849	10800
10880	1.850	0.2671552	1.0830910	1.714	0.2339428	1.2275031	10880
10960	1.845	0.2660697	1.0864600	1.710	0.2328973	1.2313213	10960
11000	1.843	0.2655310	1.0881445	1.708	0.2323787	1.2332304	11000
11040	1.841	0.2649950	1.0898290	1.706	0.2318627	1.2351395	11040

Sine of Inclina- tion (1 over)	n = .020			n = .0225			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7860	1.782	0.2509899	1.2464784	1.665	0.2213714	1.4022825	7360
7440	1.775	0.2492299	1.2509654	1.658	0.2197068	1.4073360	7440
7500	1.770	0.2479688	1.2543844	1.654	0.2184782	1.4111261	7500
7520	1.768	0.2475440	1.2554574	1.652	0.2180651	1.4123895	7520
7600	1.761	0.2458818	1.2599494	1.646	0.2164475	1.4174430	7600
7680	1.755	0.2442427	1.2644414	1.640	0.2148529	1.4224965	7680
7760	1.748	0.2426262	1.2689384	1.634	0.2132807	1.4275500	7760
7840	1.742	0.2410819	1.2734254	1.628	0.2117306	1.4326035	7840
7920	1.736	0.2394594	1.2779174	1.623	0.2102022	1.4376570	7920
8000	1.729	0.2379080	1.2824094	1.617	0.2086948	1.4427105	8000
8080	1.723	0.2363774	1.2869014	1.611	0.2072080	1.4477640	8080
8160	1.717	0.2348672	1.2913934	1.606	0.2057415	1.4528175	8160
8240	1.712	0.2333770	1.2958854	1.601	0.2042948	1.4578710	8240
8320	1.706	0.2319068	1.3003774	1.595	0.2028675	1.4629245	8320
8400	1.700	0.2304549	1.3048694	1.590	0.2014594	1.4679780	8400
8480	1.694	0.2290222	1.3093614	1.585	0.2000699	1.4730315	8480
8560	1.689	0.2276079	1.3138534	1.580	0.1986986	1.4780850	8560
8640	1.683	0.2262117	1.3183454	1.575	0.1973453	1.4831385	8640
8720	1.678	0.2248333	1.3228374	1.570	0.1960096	1.4881920	8720
8800	1.673	0.2234722	1.3273294	1.566	0.1946911	1.4932455	8800
8880	1.668	0.2221281	1.3318214	1.561	0.1933896	1.4982990	8880
8960	1.663	0.2208008	1.3363134	1.556	0.1921048	1.5033525	8960
9000	1.658	0.2201433	1.3385594	1.554	0.1914684	1.5058792	9000
9040	1.653	0.2194899	1.3408054	1.552	0.1908362	1.5084060	9040
9120	1.648	0.2181952	1.3452974	1.547	0.1895836	1.5134595	9120
9200	1.643	0.2169163	1.3497894	1.543	0.1883467	1.5185130	9200
9280	1.638	0.2156529	1.3542814	1.539	0.1871252	1.5235665	9280
9360	1.634	0.2144048	1.3587734	1.534	0.1859189	1.5286200	9360
9440	1.629	0.2131716	1.3632654	1.530	0.1847274	1.5336735	9440
9520	1.625	0.2119532	1.3677574	1.526	0.1835505	1.5387270	9520
9600	1.620	0.2107493	1.3722495	1.522	0.1823879	1.5437805	9600
9680	1.616	0.2095596	1.3767414	1.518	0.1812396	1.5488340	9680
9760	1.611	0.2083839	1.3812334	1.514	0.1801051	1.5538875	9760
9840	1.607	0.2072219	1.3857254	1.510	0.1789842	1.5589410	9840
9920	1.603	0.2060734	1.3902174	1.506	0.1778766	1.5639945	9920
10000	1.599	0.2049381	1.3947094	1.502	0.1767821	1.5690480	10000
10080	1.595	0.2038159	1.3992014	1.499	0.1757005	1.5741015	10080
10160	1.591	0.2027065	1.4036934	1.495	0.1746317	1.5791550	10160
10240	1.587	0.2016098	1.4081854	1.491	0.1735754	1.5842085	10240
10320	1.583	0.2005254	1.4126774	1.488	0.1725314	1.5892620	10320
10400	1.579	0.1994533	1.4171694	1.484	0.1714995	1.5943155	10400
10480	1.575	0.1983931	1.4216614	1.481	0.1704795	1.5993690	10480
10560	1.571	0.1973448	1.4261534	1.477	0.1694710	1.6044225	10560
10640	1.568	0.1963032	1.4306454	1.474	0.1684744	1.6094760	10640
10720	1.564	0.1952829	1.4351374	1.471	0.1674889	1.6145295	10720
10800	1.561	0.1942689	1.4396294	1.467	0.1665146	1.6195830	10800
10880	1.557	0.1932661	1.4441214	1.464	0.1655513	1.6246365	10880
10960	1.555	0.1922741	1.4486134	1.461	0.1645988	1.6296900	10960
11000	1.554	0.1917821	1.4508594	1.459	0.1641264	1.6322168	11000
11040	1.553	0.1912928	1.4531054	1.458	0.1636568	1.6347435	11040

Sine of Inclina- tion (1 over)	<i>n</i> = ·0250			<i>n</i> = ·0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7860	1·571	0·1961758	1·5580917	1·494	0·1744153	1·7189009	7860
7440	1·565	0·1945514	1·5687067	1·489	0·1728281	1·7201774	7440
7500	1·561	0·1933487	1·5679180	1·485	0·1716582	1·7248097	7500
7520	1·559	0·1929508	1·5693217	1·483	0·1712645	1·7262539	7520
7600	1·554	0·1913736	1·5749867	1·478	0·1697242	1·7324804	7600
7680	1·548	0·1898194	1·5805517	1·473	0·1682067	1·7386069	7680
7760	1·543	0·1882875	1·5861667	1·468	0·1667114	1·7447884	7760
7840	1·537	0·1867774	1·5917817	1·463	0·1652378	1·7509599	7840
7920	1·532	0·1852888	1·5973967	1·458	0·1637856	1·7571364	7920
8000	1·527	0·1838212	1·6030117	1·453	0·1623543	1·7633129	8000
8080	1·522	0·1823742	1·6086267	1·449	0·1609484	1·7694894	8080
8160	1·517	0·1809473	1·6142417	1·444	0·1595525	1·7756659	8160
8240	1·512	0·1795401	1·6198567	1·439	0·1581811	1·7818424	8240
8320	1·507	0·1781521	1·6254717	1·435	0·1568289	1·7880189	8320
8400	1·502	0·1767831	1·6310867	1·431	0·1554956	1·7941954	8400
8480	1·498	0·1754326	1·6367017	1·426	0·1541807	1·8003719	8480
8560	1·493	0·1741003	1·6423167	1·422	0·1528838	1·8065484	8560
8640	1·489	0·1727858	1·6479317	1·418	0·1516046	1·8127249	8640
8720	1·484	0·1714889	1·6535467	1·414	0·1503428	1·8189014	8720
8800	1·480	0·1702091	1·6591617	1·410	0·1490980	1·8250779	8800
8880	1·476	0·1689460	1·6647767	1·406	0·1478698	1·8312544	8880
8960	1·471	0·1676994	1·6703917	1·402	0·1466561	1·8374309	8960
9000	1·469	0·1670821	1·6731992	1·400	0·1460582	1·8405191	9000
9040	1·467	0·1664690	1·6760067	1·398	0·1454624	1·8436074	9040
9120	1·463	0·1652545	1·6816217	1·394	0·1442825	1·8497839	9120
9200	1·459	0·1640556	1·6872367	1·390	0·1431181	1·8559604	9200
9280	1·455	0·1628720	1·6928517	1·387	0·1419688	1·8621369	9280
9360	1·451	0·1617034	1·6984667	1·383	0·1408345	1·8683134	9360
9440	1·447	0·1605495	1·7040817	1·379	0·1397148	1·8744899	9440
9520	1·443	0·1594101	1·7096967	1·376	0·1386095	1·8806664	9520
9600	1·440	0·1582850	1·7153117	1·373	0·1375182	1·8868429	9600
9680	1·436	0·1571739	1·7209267	1·369	0·1364409	1·8930194	9680
9760	1·432	0·1560765	1·7265417	1·366	0·1353772	1·8991959	9760
9840	1·429	0·1549926	1·7321567	1·362	0·1343270	1·9053724	9840
9920	1·425	0·1539220	1·7377717	1·359	0·1332898	1·9115489	9920
10000	1·422	0·1528644	1·7433867	1·356	0·1322655	1·9177254	10000
10080	1·418	0·1518195	1·7490017	1·353	0·1312539	1·9239019	10080
10160	1·415	0·1507878	1·7546167	1·350	0·1302548	1·9300784	10160
10240	1·412	0·1497675	1·7602317	1·347	0·1292681	1·9362549	10240
10320	1·409	0·1487598	1·7658467	1·344	0·1282935	1·9424314	10320
10400	1·405	0·1477642	1·7714617	1·341	0·1273306	1·9486079	10400
10480	1·402	0·1467803	1·7770767	1·338	0·1263796	1·9547844	10480
10560	1·399	0·1458081	1·7826917	1·335	0·1254399	1·9609609	10560
10640	1·396	0·1448473	1·7883067	1·332	0·1245116	1·9671374	10640
10720	1·393	0·1438976	1·7939217	1·329	0·1235943	1·9733139	10720
10800	1·390	0·1429589	1·7995367	1·326	0·1226880	1·9794904	10800
10880	1·387	0·1420312	1·8051517	1·324	0·1217925	1·9856669	10880
10960	1·384	0·1411142	1·8107667	1·321	0·1209076	1·9918434	10960
11000	1·382	0·1406596	1·8135742	1·320	0·1204690	1·9949316	11000
11040	1·381	0·1402076	1·8163817	1·318	0·1200331	1·9980199	11040

Sine of Inclina- tion (1 over)	n = .030			n = .035			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
7360	1.430	0.1554097	1.8697100	1.380	0.1237546	2.1813284	7360
7440	1.425	0.1538568	1.8764480	1.325	0.1222613	2.1891894	7440
7500	1.421	0.1527070	1.8815015	1.322	0.1211567	2.1950851	7500
7520	1.420	0.1523267	1.8831860	1.321	0.1207914	2.1970504	7520
7600	1.415	0.1508202	1.8899240	1.316	0.1108444	2.2049114	7600
7680	1.410	0.1493363	1.8966620	1.312	0.1179198	2.2127724	7680
7760	1.406	0.1478745	1.9034000	1.308	0.1165170	2.2206384	7760
7840	1.401	0.1464843	1.9101880	1.304	0.1151357	2.2284944	7840
7920	1.396	0.1450154	1.9168760	1.299	0.1137755	2.2363554	7920
8000	1.392	0.1436172	1.9236140	1.296	0.1124358	2.2442164	8000
8080	1.388	0.1422393	1.9303520	1.292	0.1111160	2.2520774	8080
8160	1.383	0.1408813	1.9370900	1.288	0.1098160	2.2599384	8160
8240	1.379	0.1395428	1.9438280	1.284	0.1085353	2.2677994	8240
8320	1.375	0.1382232	1.9505660	1.280	0.1072733	2.2756604	8320
8400	1.371	0.1369224	1.9573040	1.277	0.1060299	2.2835214	8400
8480	1.367	0.1356399	1.9640420	1.273	0.1048045	2.2913824	8480
8560	1.363	0.1343754	1.9707800	1.269	0.1035968	2.2992434	8560
8640	1.359	0.1331285	1.9775180	1.266	0.1024066	2.3071044	8640
8720	1.355	0.1318989	1.9842560	1.263	0.1012335	2.3149654	8720
8800	1.351	0.1306861	1.9909940	1.259	0.1000770	2.3228264	8800
8880	1.347	0.1294898	1.9977320	1.256	0.0989368	2.3306874	8880
8960	1.344	0.1283098	2.0044700	1.253	0.0978128	2.3385484	8960
9000	1.342	0.1277256	2.0078390	1.251	0.0972566	2.3424789	9000
9040	1.340	0.1271457	2.0112080	1.249	0.0967045	2.3464094	9040
9120	1.337	0.1259973	2.0179460	1.246	0.0956116	2.3542704	9120
9200	1.333	0.1248643	2.0246840	1.243	0.0945339	2.3621314	9200
9280	1.330	0.1237464	2.0314220	1.240	0.0934710	2.3699924	9280
9360	1.326	0.1226434	2.0381600	1.237	0.0924228	2.3778534	9360
9440	1.323	0.1215548	2.0448980	1.234	0.0913889	2.3857144	9440
9520	1.320	0.1204805	2.0516360	1.231	0.0903691	2.3935754	9520
9600	1.316	0.1194202	2.0583740	1.228	0.0893630	2.4014364	9600
9680	1.313	0.1183737	2.0651120	1.226	0.0883707	2.4092974	9680
9760	1.310	0.1173407	2.0718500	1.223	0.0873916	2.4171584	9760
9840	1.307	0.1163210	2.0785880	1.220	0.0864256	2.4250194	9840
9920	1.304	0.1153144	2.0853260	1.218	0.0854724	2.4328804	9920
10000	1.301	0.1143206	2.0920640	1.215	0.0845319	2.4407414	10000
10080	1.298	0.1133393	2.0988020	1.212	0.0836038	2.4486024	10080
10160	1.295	0.1123704	2.1055400	1.210	0.0826879	2.4564634	10160
10240	1.292	0.1114138	2.1122780	1.207	0.0817840	2.4643244	10240
10320	1.290	0.1104691	2.1190160	1.205	0.0808918	2.4721854	10320
10400	1.287	0.1095362	2.1257540	1.202	0.0800113	2.4800464	10400
10480	1.284	0.1086149	2.1324920	1.200	0.0791421	2.4879074	10480
10560	1.281	0.1077048	2.1392300	1.198	0.0782842	2.4957684	10560
10640	1.279	0.1068061	2.1459680	1.195	0.0774373	2.5036294	10640
10720	1.276	0.1059184	2.1527060	1.193	0.0766012	2.5114904	10720
10800	1.274	0.1050415	2.1594440	1.191	0.0757757	2.5193514	10800
10880	1.271	0.1041753	2.1661820	1.188	0.0749609	2.5272124	10880
10960	1.269	0.1033195	2.1729200	1.186	0.0741562	2.5350734	10960
11000	1.267	0.1028954	2.1762890	1.185	0.0737577	2.5390034	11000
11040	1.266	0.1024741	2.1796580	1.184	0.0733617	2.5429344	11040

Sine of Inclina- tion (1 over)	$n = \cdot 050$			Sine of Inclina- tion (1 over)	$n = \cdot 009$		
	N	log. N	D		N	log. N	D
7360	1·149	0·0602185	3·0161834	11120	2·600	0·4149171	·65591881
7440	1·145	0·0588596	3·0274134	11200	2·592	0·4137162	·65794021
7500	1·142	0·0578555	3·0358358	11280	2·585	0·4125261	·65996161
7520	1·142	0·0575235	3·0386434	11360	2·578	0·4113466	·66198301
7600	1·138	0·0562098	3·0498734	11440	2·571	0·4101775	·66400441
7680	1·135	0·0549179	3·1611034	11520	2·565	0·4090187	·66602581
7760	1·131	0·0536473	3·1723334	11600	2·558	0·4078701	·66804721
7840	1·128	0·0523977	3·1835634	11680	2·551	0·4067317	·67006861
7920	1·125	0·0511686	3·1947934	11760	2·545	0·4056031	·67209001
8000	1·122	0·0499593	3·2060234	11840	2·538	0·4044842	·67411141
8080	1·119	0·0487695	3·2172534	11920	2·531	0·4032751	·67613281
8160	1·116	0·0475989	3·2284834	12000	2·525	0·4022754	·67815421
8240	1·113	0·0464471	3·2397134	12080	2·519	0·4011850	·68017561
8320	1·110	0·0453135	3·2509434	12160	2·512	0·4001039	·68219701
8400	1·107	0·0441980	3·2621734	12240	2·506	0·3990319	·68421841
8480	1·104	0·0430999	3·2734034	12320	2·500	0·3979688	·68623981
8560	1·102	0·0420190	3·2846334	12400	2·494	0·3969147	·68826121
8640	1·099	0·0409550	3·2958634	12480	2·488	0·3958693	·69028261
8722	1·096	0·0399076	3·3070934	12560	2·482	0·3948326	·69230401
8800	1·094	0·0388763	3·3183234	12640	2·476	0·3938045	·69432541
8880	1·091	0·0378608	3·3295534	12720	2·470	0·3927847	·69634681
9960	1·089	0·0368610	3·3407834	12800	2·465	0·3917732	·69836821
9000	1·087	0·0363667	3·3463984	12880	2·459	0·3907698	·70038961
9040	1·086	0·0358764	3·3520134	12960	2·453	0·3897746	·70241101
9120	1·084	0·0349067	3·3632434	13000	2·451	0·3892799	·70443241
9200	1·081	0·0339517	3·3744734	13040	2·448	0·3887874	·70443241
9280	1·079	0·0330111	3·3857034	13120	2·442	0·3878081	·70645381
9360	1·077	0·0320846	3·3969334	13200	2·437	0·3868365	·70847521
9440	1·074	0·0311719	3·4081634	13280	2·431	0·3858727	·71049661
9520	1·072	0·0302728	3·4193934	13360	2·426	0·3849167	·71251801
9600	1·070	0·0293870	3·4306234	13440	2·421	0·3839680	·71453941
9680	1·068	0·0285144	3·4418534	13520	2·416	0·3830267	·71656081
9760	1·066	0·0276546	3·4530834	13600	2·410	0·3820927	·71858221
9840	1·064	0·0268075	3·4643134	13680	2·405	0·3811659	·72060361
9920	1·062	0·0259727	3·4755434	13760	2·400	0·3802463	·72262501
10000	1·060	0·0251500	3·4867734	13840	2·395	0·3793338	·72464641
10080	1·058	0·0243393	3·4980034	13920	2·390	0·3784282	·72666781
10160	1·056	0·0235403	3·5092334	14000	2·385	0·3775296	·72868921
10240	1·054	0·0227529	3·5204634	14080	2·380	0·3766378	·73071061
10320	1·052	0·0219768	3·5316934	14160	2·375	0·3757527	·73273201
10400	1·050	0·0212118	3·5429234	14240	2·371	0·3748742	·73475341
10480	1·048	0·0204577	3·5541534	14320	2·366	0·3740024	·73677481
10560	1·046	0·0197144	3·5653834	14400	2·361	0·3731371	·73879621
10640	1·045	0·0189818	3·5766134	14480	2·357	0·3722783	·74081761
10720	1·043	0·0182595	3·5878434	14560	2·352	0·3714257	·74283901
10800	1·041	0·0175474	3·5990734	14640	2·347	0·3705793	·74486041
10880	1·040	0·0168454	3·6103034	14720	2·343	0·3697392	·74688181
10960	1·038	0·0161532	3·6215334	14800	2·338	0·3689053	·74890321
11000	1·037	0·0158107	3·6271484	14880	2·334	0·3680775	·75092461
11040	1·036	0·0154707	3·6327634	14960	2·329	0·3672556	·75294601

Sine of Inclina- tion (1 over)	n = .010			n = .011			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	2·409	0·8818024	·72879868	2·258	0·8526949	·80167854	11120
11200	2·402	0·8806297	·78104468	2·247	0·8515488	·80414914	11200
11280	2·396	0·8794677	·78329068	2·241	0·8504138	·80661974	11280
11860	2·390	0·8783162	·78553668	2·235	0·8492883	·80909034	11860
11440	2·383	0·8771751	·78778268	2·229	0·8481737	·81156094	11440
11520	2·377	0·8760443	·74002868	2·224	0·8470693	·81403154	11520
11600	2·371	0·8749237	·74227468	2·218	0·8459750	·81650214	11600
11680	2·365	0·8738132	·74452068	2·213	0·8448908	·81897274	11680
11760	2·359	0·8727124	·74676668	2·207	0·8438163	·82144334	11760
11840	2·353	0·8716213	·74901268	2·202	0·8427514	·82391394	11840
11920	2·347	0·8705399	·75125868	2·196	0·8416962	·82638454	11920
12000	2·341	0·8694679	·75350468	2·191	0·8406508	·82885514	12000
12080	2·336	0·8684051	·75575068	2·186	0·8396136	·83132574	12080
12160	2·330	0·8673516	·75799668	2·181	0·8385861	·83379634	12160
12240	2·324	0·8663072	·76024268	2·176	0·8375677	·83626694	12240
12320	2·319	0·8652717	·76248868	2·170	0·8365581	·83873754	12320
12400	2·313	0·8642450	·76473468	2·165	0·8355572	·84120814	12400
12480	2·308	0·8632270	·76698068	2·161	0·8345650	·84367874	12480
12560	2·303	0·8622176	·76922668	2·156	0·8335815	·84614934	12560
12640	2·297	0·8612168	·77147268	2·151	0·8326065	·84861994	12640
12720	2·292	0·8602243	·77371868	2·146	0·8316397	·85109054	12720
12800	2·287	0·8592401	·77596468	2·141	0·8306811	·85356114	12800
12880	2·282	0·8582640	·77821068	2·137	0·8297305	·85603174	12880
12960	2·277	0·8572959	·78045668	2·132	0·8287880	·85850234	12960
13000	2·274	0·8563148	·78157968	2·130	0·8283196	·85973764	13000
13040	2·272	0·8563358	·78270268	2·127	0·8278534	·86097294	13040
13120	2·267	0·8553836	·78494868	2·123	0·8269266	·86344354	13120
13200	2·262	0·8544390	·78719468	2·118	0·8260074	·86591414	13200
13280	2·257	0·8535021	·78944068	2·114	0·8250959	·86838474	13280
13360	2·252	0·8525729	·79168668	2·110	0·8241920	·87085534	13360
13440	2·247	0·8516511	·79393268	2·105	0·8232955	·87332594	13440
13520	2·243	0·8507366	·79617868	2·101	0·8224063	·87579654	13520
13600	2·238	0·8498294	·79842468	2·097	0·8215243	·87826714	13600
13680	2·233	0·8489294	·80067068	2·092	0·8206495	·88073774	13680
13760	2·229	0·8480365	·80291668	2·088	0·8197817	·88320834	13760
13840	2·224	0·8471506	·80516268	2·084	0·8189209	·88567894	13840
13920	2·220	0·8462716	·80740868	2·080	0·8180669	·88814954	13920
14000	2·215	0·8453995	·80965468	2·076	0·8172198	·89062014	14000
14080	2·211	0·8445342	·81190068	2·072	0·8163795	·89309074	14080
14160	2·206	0·8436756	·81414668	2·068	0·8155458	·89556134	14160
14240	2·202	0·8428236	·81639268	2·064	0·8147185	·89803194	14240
14320	2·198	0·8419782	·81863868	2·060	0·8138978	·90050254	14320
14400	2·194	0·8411392	·82088468	2·056	0·8130837	·90297314	14400
14480	2·189	0·8403066	·82313068	2·052	0·8122758	·90544374	14480
14560	2·185	0·8394803	·82537668	2·049	0·8114742	·90791434	14560
14640	2·181	0·8386602	·82762268	2·045	0·8106787	·91038494	14640
14720	2·177	0·8378463	·82986868	2·041	0·8098893	·91285554	14720
14800	2·173	0·8370385	·83211468	2·038	0·8091060	·91532614	14800
14880	2·169	0·8362367	·83436068	2·034	0·8083288	·91779674	14880
14960	2·165	0·8354409	·83660668	2·030	0·8075575	·92026734	14960

Sine of Inclina- tion (1 over)	$n = \cdot 012$			$n = \cdot 013$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	2-123	0-8268535	87455841	2-012	0-8037187	94743828	11120
11200	2-117	0-8257324	87725361	2-007	0-8026215	95085808	11200
11280	2-112	0-8246220	87994881	2-002	0-8015349	95327788	11280
11360	2-106	0-8235222	88264401	1-997	0-8004587	95619768	11360
11440	2-101	0-8224326	88533921	1-992	0-2993927	95911748	11440
11520	2-096	0-8213532	88803441	1-988	0-2983370	96203728	11520
11600	2-091	0-8202837	89072961	1-983	0-2972912	96495708	11600
11680	2-086	0-8192245	89342481	1-978	0-2962553	96787688	11680
11760	2-081	0-8181748	89612001	1-973	0-2952291	97079668	11760
11840	2-076	0-8171347	89881521	1-969	0-2942123	97371648	11840
11920	2-071	0-8161042	90151041	1-964	0-2932052	97663628	11920
12000	2-066	0-8150829	90420561	1-960	0-2922073	97955608	12000
12080	2-061	0-8140708	90690081	1-955	0-2912185	98247588	12080
12160	2-056	0-8130679	90959601	1-951	0-2902389	98539568	12160
12240	2-052	0-8120740	91229121	1-947	0-2892682	98831548	12240
12320	2-047	0-8110889	91498641	1-942	0-2883062	99123528	12320
12400	2-042	0-8101125	91768161	1-938	0-2873529	99415508	12400
12480	2-038	0-8091447	92037681	1-934	0-2864082	99707488	12480
12560	2-033	0-8081855	92307201	1-930	0-2854720	99999468	12560
12640	2-029	0-8072347	92576721	1-926	0-2845442	1-0029145	12640
12720	2-024	0-8062921	92846241	1-921	0-2836245	1-0058348	12720
12800	2-020	0-8053577	93115761	1-917	0-2827130	1-0087541	12800
12880	2-016	0-8044313	93385281	1-913	0-2818094	1-0116739	12880
12960	2-011	0-8035129	93654801	1-909	0-2809137	1-0145937	12960
13000	2-009	0-8030566	93789561	1-908	0-2804688	1-0160536	13000
13040	2-007	0-8026024	93924321	1-906	0-2800259	1-0175135	13040
13120	2-003	0-8016997	94193841	1-902	0-2791459	1-0204333	13120
13200	1-999	0-8008045	94463361	1-898	0-2782734	1-0233531	13200
13280	1-995	0-2999169	94732881	1-894	0-2774084	1-0262729	13280
13360	1-991	0-2990369	95002401	1-890	0-2765509	1-0291927	13360
13440	1-987	0-2981642	95271921	1-887	0-2757007	1-0321125	13440
13520	1-983	0-2972987	95541441	1-883	0-2748577	1-0350323	13520
13600	1-979	0-2964405	95810961	1-879	0-2740219	1-0379521	13600
13680	1-975	0-2955894	96080481	1-876	0-2731931	1-0408719	13680
13760	1-971	0-2947452	96350001	1-872	0-2723712	1-0437917	13760
13840	1-967	0-2939080	96619521	1-869	0-2715563	1-0467115	13840
13920	1-964	0-2930776	96889041	1-865	0-2707482	1-0496313	13920
14000	1-960	0-2922540	97158561	1-862	0-2699468	1-0525511	14000
14080	1-956	0-2914371	97428081	1-858	0-2691520	1-0554709	14080
14160	1-953	0-2906269	97697601	1-855	0-2683638	1-0583907	14160
14240	1-949	0-2898230	97967121	1-852	0-2675821	1-0613105	14240
14320	1-945	0-2890256	98236641	1-848	0-2668068	1-0642303	14320
14400	1-942	0-2882347	98506161	1-845	0-2660379	1-0671501	14400
14480	1-938	0-2874501	98775681	1-842	0-2652751	1-0700699	14480
14560	1-935	0-2866717	99045201	1-839	0-2645187	1-0729897	14560
14640	1-932	0-2858994	99314721	1-836	0-2637682	1-0759095	14640
14720	1-928	0-2851332	99584241	1-832	0-2630238	1-0788293	14720
14800	1-925	0-2843730	99853761	1-829	0-2622853	1-0817491	14800
14880	1-921	0-2836187	10012328	1-826	0-2615527	1-0846689	14880
14960	1-918	0-2828704	10039280	1-823	0-2608260	1-0875887	14960

Sine of Inclina- tion (1 over)	n = .014			n = .015			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	1.918	0.2828580	1.0208181	1.886	0.2689811	1.0981980	11120
11200	1.918	0.2817884	1.0234625	1.882	0.2628780	1.0965670	11200
11280	1.909	0.2807194	1.0266069	1.827	0.2618858	1.0999860	11280
11860	1.904	0.2796657	1.0297518	1.828	0.2608080	1.1088050	11860
11440	1.899	0.2786222	1.0328957	1.819	0.2597808	1.1066740	11440
11520	1.895	0.2775887	1.0860401	1.815	0.2587687	1.1100430	11520
11600	1.890	0.2765658	1.0891845	1.810	0.2577664	1.1184120	11600
11680	1.886	0.2755517	1.0423289	1.806	0.2567741	1.1167810	11680
11760	1.882	0.2745478	1.0454788	1.802	0.2557918	1.1201500	11760
11840	1.877	0.2735538	1.0486177	1.798	0.2548178	1.1285190	11840
11920	1.878	0.2725688	1.0517621	1.794	0.2538539	1.1268880	11920
12000	1.869	0.2715925	1.0549065	1.790	0.2528991	1.1302570	12000
12080	1.865	0.2706258	1.0580509	1.786	0.2519583	1.1886260	12080
12160	1.861	0.2696682	1.0611958	1.782	0.2510165	1.1869950	12160
12240	1.857	0.2687195	1.0643397	1.779	0.2500886	1.1408640	12240
12320	1.853	0.2677794	1.0674841	1.775	0.2491698	1.1437330	12320
12400	1.849	0.2668480	1.0706285	1.771	0.2482586	1.1471020	12400
12480	1.845	0.2659250	1.0737729	1.767	0.2473564	1.1504710	12480
12560	1.841	0.2650105	1.0769173	1.764	0.2464626	1.1538400	12560
12640	1.837	0.2641045	1.0800617	1.760	0.2455772	1.1572090	12640
12720	1.833	0.2632066	1.0832061	1.757	0.2446999	1.1605780	12720
12800	1.829	0.2623168	1.0863505	1.753	0.2438305	1.1639470	12800
12880	1.826	0.2614348	1.0894949	1.750	0.2429690	1.1673160	12880
12960	1.822	0.2605607	1.0926393	1.746	0.2421153	1.1706850	12960
13000	1.820	0.2601265	1.0942115	1.745	0.2416913	1.1728695	13000
13040	1.818	0.2596944	1.0957837	1.743	0.2412694	1.1740540	13040
13120	1.815	0.2588358	1.0989281	1.740	0.2404311	1.1774230	13120
13200	1.811	0.2579847	1.1020725	1.736	0.2396008	1.1807920	13200
13280	1.808	0.2571411	1.1052169	1.733	0.2387769	1.1841610	13280
13360	1.804	0.2563050	1.1083613	1.730	0.2379609	1.1875300	13360
13440	1.801	0.2554760	1.1115057	1.726	0.2371521	1.1908990	13440
13520	1.797	0.2546542	1.1146501	1.723	0.2363505	1.1942680	13520
13600	1.794	0.2538396	1.1177945	1.720	0.2355560	1.1976370	13600
13680	1.791	0.2530320	1.1209389	1.717	0.2347684	1.2010060	13680
13760	1.787	0.2522318	1.1240833	1.714	0.2339876	1.2043750	13760
13840	1.784	0.2514375	1.1272277	1.711	0.2332137	1.2077440	13840
13920	1.781	0.2506503	1.1303721	1.708	0.2324465	1.2111130	13920
14000	1.778	0.2498698	1.1335165	1.705	0.2316859	1.2144820	14000
14080	1.775	0.2490960	1.1366609	1.701	0.2309319	1.2178510	14080
14160	1.771	0.2483287	1.1398053	1.699	0.2301843	1.2212200	14160
14240	1.768	0.2475678	1.1429497	1.696	0.2294431	1.2245890	14240
14320	1.765	0.2468138	1.1460941	1.693	0.2287088	1.2279580	14320
14400	1.762	0.2460651	1.1492385	1.690	0.2279797	1.2313270	14400
14480	1.759	0.2453231	1.1523829	1.688	0.2272573	1.2346960	14480
14560	1.756	0.2445872	1.1555273	1.685	0.2265410	1.2380650	14560
14640	1.753	0.2438574	1.1586717	1.682	0.2258307	1.2414340	14640
14720	1.750	0.2431336	1.1618161	1.679	0.2251263	1.2448030	14720
14800	1.747	0.2424156	1.1649605	1.677	0.2244278	1.2481720	14800
14880	1.745	0.2417035	1.1681049	1.674	0.2237352	1.2515410	14880
14960	1.742	0.2409973	1.1712493	1.671	0.2230483	1.2549100	14960

Sine of Inclina- tion (1 over)	$n = \cdot 017$			$n = \cdot 020$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	1.702	0.2306889	1.2869577	1.550	0.1908221	1.4575974	11120
11200	1.698	0.2298255	1.2427759	1.547	0.1898619	1.4620894	11200
11280	1.694	0.2288226	1.2465941	1.548	0.1884120	1.4665814	11280
11360	1.690	0.2278299	1.2504123	1.540	0.1874721	1.4710784	11360
11440	1.686	0.2268478	1.2542305	1.537	0.1865422	1.4755654	11440
11520	1.682	0.2258746	1.2580487	1.538	0.1856220	1.4800574	11520
11600	1.678	0.2249119	1.2618669	1.530	0.1847115	1.4845494	11600
11680	1.675	0.2239586	1.2656851	1.527	0.1838107	1.4890414	11680
11760	1.671	0.2230150	1.2695033	1.524	0.1829192	1.4935334	11760
11840	1.668	0.2220806	1.2733215	1.521	0.1820368	1.4980254	11840
11920	1.664	0.2211556	1.2771397	1.518	0.1811687	1.5025174	11920
12000	1.661	0.2202397	1.2809579	1.515	0.1802995	1.5070094	12000
12080	1.657	0.2193327	1.2847761	1.512	0.1794441	1.5115014	12080
12160	1.654	0.2184347	1.2885943	1.509	0.1785975	1.5159934	12160
12240	1.650	0.2175454	1.2924125	1.506	0.1777595	1.5204854	12240
12320	1.647	0.2166646	1.2962307	1.508	0.1769299	1.5249774	12320
12400	1.644	0.2157924	1.3000489	1.500	0.1761088	1.5294694	12400
12480	1.640	0.2149285	1.3038671	1.497	0.1752959	1.5339614	12480
12560	1.637	0.2140780	1.3076853	1.494	0.1744912	1.5384534	12560
12640	1.634	0.2132257	1.3115035	1.492	0.1736946	1.5429454	12640
12720	1.631	0.2123864	1.3153217	1.489	0.1729058	1.5474374	12720
12800	1.628	0.2115550	1.3191399	1.486	0.1721247	1.5519294	12800
12880	1.623	0.2107314	1.3229581	1.484	0.1713514	1.5564214	12880
12960	1.621	0.2099155	1.3267763	1.481	0.1705857	1.5609134	12960
13000	1.620	0.2095105	1.3286854	1.480	0.1702056	1.5631594	13000
13040	1.618	0.2091073	1.3305945	1.479	0.1698275	1.5654054	13040
13120	1.615	0.2083067	1.3344127	1.476	0.1690768	1.5698974	13120
13200	1.613	0.2075134	1.3382309	1.473	0.1683333	1.5743894	13200
13280	1.610	0.2067275	1.3420491	1.471	0.1675970	1.5788814	13280
13360	1.607	0.2059490	1.3458673	1.469	0.1668679	1.5833734	13360
13440	1.604	0.2051775	1.3496855	1.466	0.1661458	1.5878654	13440
13520	1.601	0.2044130	1.3535037	1.464	0.1654306	1.5923574	13520
13600	1.598	0.2036555	1.3573219	1.461	0.1647223	1.5968494	13600
13680	1.596	0.2029049	1.3611401	1.459	0.1640208	1.6013414	13680
13760	1.593	0.2021611	1.3649583	1.457	0.1633259	1.6058334	13760
13840	1.590	0.2014240	1.3687765	1.454	0.1626376	1.6103254	13840
13920	1.587	0.2006935	1.3725947	1.452	0.1619557	1.6148174	13920
14000	1.585	0.1999696	1.3764129	1.450	0.1612803	1.6193094	14000
14080	1.582	0.1992522	1.3802311	1.447	0.1606113	1.6238014	14080
14160	1.580	0.1985412	1.3840493	1.445	0.1599486	1.6282934	14160
14240	1.577	0.1978364	1.3878675	1.443	0.1592920	1.6327854	14240
14320	1.574	0.1971379	1.3916857	1.441	0.1586416	1.6372774	14320
14400	1.572	0.1964456	1.3955039	1.439	0.1579972	1.6417694	14400
14480	1.569	0.1957594	1.3993221	1.437	0.1573588	1.6462614	14480
14560	1.567	0.1950798	1.4031403	1.435	0.1567262	1.6507534	14560
14640	1.565	0.1944049	1.4069585	1.433	0.1560994	1.6552454	14640
14720	1.562	0.1937364	1.4107767	1.430	0.1554784	1.6597374	14720
14800	1.560	0.1930788	1.4145949	1.428	0.1548631	1.6642294	14800
14880	1.557	0.1924169	1.4184131	1.426	0.1542535	1.6687214	14880
14960	1.555	0.1917657	1.4222313	1.424	0.1536494	1.6732134	14960

Sine of Inclina- tion (1 over)	n = .0225			n = .0250			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	1.455	0.1627253	1.6397970	1.378	0.1398114	1.8219967	11120
11200	1.451	0.1618042	1.6448505	1.375	0.1384255	1.8276117	11200
11280	1.448	0.1608933	1.6499040	1.373	0.1375496	1.8332267	11280
11360	1.445	0.1599923	1.6549575	1.370	0.1366836	1.8388417	11360
11440	1.442	0.1591011	1.6600110	1.367	0.1358272	1.8444567	11440
11520	1.440	0.1582196	1.6650645	1.365	0.1349805	1.8500717	11520
11600	1.437	0.1573477	1.6701180	1.362	0.1341432	1.8556867	11600
11680	1.434	0.1564853	1.6751715	1.359	0.1333154	1.8613017	11680
11760	1.431	0.1556321	1.6802250	1.357	0.1324966	1.8669167	11760
11840	1.428	0.1547879	1.6852785	1.354	0.1316868	1.8725317	11840
11920	1.425	0.1539529	1.6903320	1.352	0.1308861	1.8781467	11920
12000	1.423	0.1531267	1.6953855	1.349	0.1300940	1.8837617	12000
12080	1.420	0.1523092	1.7004390	1.347	0.1293105	1.8893767	12080
12160	1.417	0.1515104	1.7054925	1.344	0.1285356	1.8949917	12160
12240	1.415	0.1507001	1.7105460	1.342	0.1277692	1.9006067	12240
12320	1.412	0.1499081	1.7155995	1.340	0.1270110	1.9062217	12320
12400	1.410	0.1491245	1.7206530	1.337	0.1262609	1.9118367	12400
12480	1.407	0.1483490	1.7257065	1.335	0.1255189	1.9174517	12480
12560	1.405	0.1475816	1.7307600	1.333	0.1247849	1.9230667	12560
12640	1.402	0.1468221	1.7358135	1.331	0.1240588	1.9286817	12640
12720	1.400	0.1460704	1.7408670	1.328	0.1233403	1.9342967	12720
12800	1.397	0.1453264	1.7459205	1.326	0.1226295	1.9399117	12800
12880	1.395	0.1445899	1.7509740	1.324	0.1219261	1.9455267	12880
12960	1.393	0.1438610	1.7560275	1.322	0.1212301	1.9511417	12960
13000	1.392	0.1434993	1.7585543	1.321	0.1208849	1.9539492	13000
13040	1.390	0.1431395	1.7610810	1.320	0.1205415	1.9567567	13040
13120	1.388	0.1424253	1.7661345	1.318	0.1198601	1.9623717	13120
13200	1.386	0.1417182	1.7711880	1.316	0.1191857	1.9679867	13200
13280	1.384	0.1410183	1.7762415	1.314	0.1185133	1.9736017	13280
13360	1.381	0.1403255	1.7812950	1.312	0.1178580	1.9792167	13360
13440	1.379	0.1396396	1.7863485	1.310	0.1172045	1.9848317	13440
13520	1.377	0.1389605	1.7914020	1.308	0.1165577	1.9904467	13520
13600	1.375	0.1382881	1.7964555	1.306	0.1159175	1.9960617	13600
13680	1.373	0.1376224	1.8015090	1.304	0.1152839	2.0016767	13680
13760	1.371	0.1369633	1.8065625	1.302	0.1146568	2.0072917	13760
13840	1.369	0.1363107	1.8116160	1.300	0.1140361	2.0129067	13840
13920	1.367	0.1356645	1.8166695	1.298	0.1134217	2.0185217	13920
14000	1.365	0.1350246	1.8217230	1.297	0.1128136	2.0241367	14000
14080	1.363	0.1343910	1.8267765	1.295	0.1122116	2.0297517	14080
14160	1.361	0.1337635	1.8318300	1.293	0.1116157	2.0353667	14160
14240	1.359	0.1331421	1.8368835	1.291	0.1110258	2.0409817	14240
14320	1.357	0.1325268	1.8419370	1.290	0.1104419	2.0465967	14320
14400	1.355	0.1319174	1.8469905	1.288	0.1098638	2.0522117	14400
14480	1.353	0.1313189	1.8520440	1.286	0.1092915	2.0578267	14480
14560	1.351	0.1307162	1.8570975	1.284	0.1087249	2.0634417	14560
14640	1.349	0.1301242	1.8621510	1.283	0.1081639	2.0690567	14640
14720	1.348	0.1295378	1.8672045	1.281	0.1076035	2.0746717	14720
14800	1.346	0.1289570	1.8722580	1.280	0.1070586	2.0802867	14800
14880	1.344	0.1283818	1.8773115	1.278	0.1065141	2.0859017	14880
14960	1.342	0.1278121	1.8823650	1.276	0.1059751	2.0915167	14960

FOR SPECIAL INCLINATIONS AND VALUES OF (n) .



Sine of Inclination (1 over)	$n = .0275$			$n = .030$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
11120	1·816	0·1191888	2·0041964	1·264	0·1016388	2·1863960	11120
11200	1·818	0·1183146	2·0103729	1·261	0·1008186	2·1981840	11200
11280	1·811	0·1174704	2·0165494	1·259	0·0999962	2·1998720	11280
11360	1·308	0·1166860	2·0227259	1·257	0·0991925	2·2066100	11360
11440	1·306	0·1158112	2·0289024	1·254	0·0983963	2·2138480	11440
11520	1·303	0·1149959	2·0350789	1·252	0·0976095	2·2200860	11520
11600	1·301	0·1141899	2·0412554	1·250	0·0968320	2·2268240	11600
11680	1·298	0·1133933	2·0474319	1·248	0·0960688	2·2335620	11680
11760	1·296	0·1126056	2·0536084	1·245	0·0953044	2·2403000	11760
11840	1·294	0·1118269	2·0597849	1·243	0·0945587	2·2470880	11840
11920	1·291	0·1110571	2·0659614	1·241	0·0938119	2·2538760	11920
12000	1·289	0·1102959	2·0721379	1·239	0·0930786	2·2605140	12000
12080	1·287	0·1095431	2·0783144	1·237	0·0923538	2·2672520	12080
12160	1·285	0·1087988	2·0844909	1·235	0·0916374	2·2739900	12160
12240	1·283	0·1080629	2·0906674	1·233	0·0909292	2·2807280	12240
12320	1·280	0·1073351	2·0968439	1·231	0·0902290	2·2874660	12320
12400	1·278	0·1066155	2·1030204	1·229	0·0895369	2·2942040	12400
12480	1·276	0·1059087	2·1091969	1·227	0·0888526	2·3009420	12480
12560	1·274	0·1051999	2·1153734	1·225	0·0881751	2·3076800	12560
12640	1·272	0·1045089	2·1215499	1·223	0·0875074	2·3144180	12640
12720	1·270	0·1038154	2·1277264	1·221	0·0868461	2·3211560	12720
12800	1·268	0·1031344	2·1339029	1·220	0·0861922	2·3278940	12800
12880	1·266	0·1024608	2·1400794	1·218	0·0855456	2·3346320	12880
12960	1·264	0·1017945	2·1462559	1·216	0·0849062	2·3413700	12960
13000	1·263	0·1014641	2·1498441	1·215	0·0845892	2·3447790	13000
13040	1·262	0·1011355	2·1524324	1·214	0·0842740	2·3481080	13040
13120	1·260	0·1004386	2·1586089	1·212	0·0836489	2·3548460	13120
13200	1·258	0·0998386	2·1647854	1·211	0·0830306	2·3615840	13200
13280	1·257	0·0992007	2·1709619	1·209	0·0824192	2·3683220	13280
13360	1·255	0·0985696	2·1771384	1·207	0·0818147	2·3750600	13360
13440	1·253	0·0979453	2·1833149	1·206	0·0812167	2·3817980	13440
13520	1·251	0·0973276	2·1894914	1·204	0·0806253	2·3885360	13520
13600	1·249	0·0967164	2·1956679	1·202	0·0800404	2·3952740	13600
13680	1·248	0·0961117	2·2018444	1·201	0·0794619	2·4020120	13680
13760	1·246	0·0955134	2·2080209	1·199	0·0788897	2·4087500	13760
13840	1·244	0·0949215	2·2141974	1·198	0·0783238	2·4154880	13840
13920	1·243	0·0943357	2·2203739	1·196	0·0777640	2·4222260	13920
14000	1·241	0·0937561	2·2265504	1·195	0·0772102	2·4289640	14000
14080	1·239	0·0931826	2·2327269	1·193	0·0766624	2·4357020	14080
14160	1·238	0·0926151	2·2389034	1·192	0·0761206	2·4424400	14160
14240	1·236	0·0920535	2·2450799	1·190	0·0755846	2·4491780	14240
14320	1·235	0·0914978	2·2512564	1·189	0·0750544	2·4559160	14320
14400	1·233	0·0909479	2·2574329	1·187	0·0745299	2·4626540	14400
14480	1·231	0·0904037	2·2636094	1·186	0·0740110	2·4693920	14480
14560	1·230	0·0898650	2·2697859	1·184	0·0734977	2·4761300	14560
14640	1·228	0·0893319	2·2759624	1·183	0·0729898	2·4828680	14640
14720	1·227	0·0888043	2·2821389	1·182	0·0724873	2·4896060	14720
14800	1·225	0·0882821	2·2883154	1·180	0·0719902	2·4963440	14800
14880	1·224	0·0877653	2·2944919	1·179	0·0714984	2·5030820	14880
14960	1·223	0·0872538	2·3006684	1·178	0·0710118	2·5098200	14960

Sine of Inclina- tion (1 over)	n = .035			n = .050			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
11120	1.182	0.0725772	2.5507954	1.085	0.0147977	8.6489984	11120
11200	1.180	0.0718025	2.5586564	1.088	0.0141342	8.6552234	11200
11280	1.178	0.0710875	2.5665174	1.082	0.0134800	8.6664584	11280
11360	1.175	0.0702821	2.5743784	1.080	0.0128848	8.6776884	11360
11440	1.174	0.0695859	2.5822394	1.028	0.0121985	8.6889184	11440
11520	1.172	0.0687990	2.5901004	1.027	0.0115710	8.7001484	11520
11600	1.170	0.0680712	2.5979614	1.026	0.0109522	8.7113784	11600
11680	1.168	0.0673524	2.6058224	1.024	0.0103421	8.7226084	11680
11760	1.166	0.0666424	2.6136834	1.023	0.0097404	8.7338384	11760
11840	1.164	0.0659409	2.6215444	1.021	0.0091487	8.7450684	11840
11920	1.162	0.0652482	2.6294054	1.020	0.0085618	8.7562984	11920
12000	1.160	0.0645638	2.6372664	1.019	0.0079889	8.7675284	12000
12080	1.158	0.0638877	2.6451274	1.017	0.0074143	8.7787584	12080
12160	1.157	0.0632198	2.6529884	1.016	0.0068526	8.7899884	12160
12240	1.155	0.0625599	2.6608494	1.015	0.0062988	8.8012184	12240
12320	1.153	0.0619079	2.6687104	1.018	0.0057520	8.8124484	12320
12400	1.151	0.0612638	2.6765714	1.012	0.0052129	8.8236784	12400
12480	1.150	0.0606274	2.6844324	1.011	0.0046811	8.8349084	12480
12560	1.148	0.0599986	2.6922934	1.010	0.0041565	8.8461384	12560
12640	1.147	0.0593774	2.7001544	1.008	0.0036391	8.8573684	12640
12720	1.145	0.0587635	2.7080154	1.007	0.0031286	8.8685984	12720
12800	1.143	0.0581569	2.7158764	1.006	0.0026250	8.8798284	12800
12880	1.142	0.0575573	2.7237374	1.005	0.0021281	8.8910584	12880
12960	1.140	0.0569648	2.7315984	1.004	0.0016379	8.9022884	12960
13000	1.139	0.0566712	2.7355289	1.003	0.0013954	8.9078984	13000
13040	1.138	0.0563793	2.7394594	1.003	0.0011544	8.9135184	13040
13120	1.137	0.0558008	2.7473204	1.002	0.0008774	8.9247484	13120
13200	1.136	0.0552290	2.7551814	1.000	0.0002067	8.9359784	13200
13280	1.134	0.0546638	2.7630424	.9994	1.9997424	8.9472084	13280
13360	1.133	0.0541054	2.7709034	.9983	1.9992844	8.9584384	13360
13440	1.131	0.0535534	2.7787644	.9973	1.9988325	8.9696684	13440
13520	1.130	0.0530079	2.7866254	.9963	1.9983866	8.9808984	13520
13600	1.128	0.0524687	2.7944864	.9953	1.9979467	8.9921284	13600
13680	1.127	0.0519357	2.8023474	.9943	1.9975127	4.0033584	13680
13760	1.126	0.0514088	2.8102084	.9933	1.9970844	4.0145884	13760
13840	1.124	0.0508881	2.8180694	.9923	1.9966619	4.0258184	13840
13920	1.123	0.0503733	2.8259304	.9914	1.9962451	4.0370484	13920
14000	1.122	0.0498645	2.8337914	.9905	1.9958339	4.0482784	14000
14080	1.120	0.0493615	2.8416524	.9895	1.9954281	4.0595084	14080
14160	1.119	0.0488643	2.8495134	.9886	1.9950277	4.0707384	14160
14240	1.118	0.0483728	2.8573744	.9877	1.9946327	4.0819684	14240
14320	1.117	0.0478870	2.8652354	.9868	1.9942430	4.0931984	14320
14400	1.115	0.0474067	2.8730964	.9860	1.9938585	4.1044284	14400
14480	1.114	0.0469318	2.8809574	.9851	1.9934791	4.1156584	14480
14560	1.113	0.0464624	2.8888184	.9842	1.9931048	4.1268884	14560
14640	1.112	0.0459983	2.8966794	.9834	1.9927355	4.1381184	14640
14720	1.111	0.0455394	2.9045404	.9826	1.9923711	4.1493484	14720
14800	1.109	0.0450857	2.9124014	.9818	1.9920115	4.1605784	14800
14880	1.108	0.0446372	2.9202624	.9810	1.9916568	4.1718084	14880
14960	1.107	0.0441939	2.9281234	.9802	1.9913069	4.1830384	14960

Sine of Inclina- tion (1 over)	$n = \cdot 009$			$n = \cdot 010$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
15000	2·327	0·8668469	·75895671	2·168	0·8350453	·83772968	15000
15040	2·325	0·8664397	·75496741	2·161	0·8346510	·83885268	15040
15120	2·321	0·8656296	·75698881	2·157	0·8338669	·84109868	15120
15200	2·316	0·8648254	·75901021	2·153	0·8330886	·84384468	15200
15280	2·312	0·8640269	·76108161	2·149	0·8323160	·84559068	15280
15360	2·308	0·8632342	·76305801	2·146	0·8315491	·84788668	15360
15440	2·304	0·8624471	·76507441	2·142	0·8307878	·85008268	15440
15520	2·300	0·8616655	·76709681	2·138	0·8300319	·85232868	15520
15600	2·296	0·8608895	·76911721	2·135	0·8292816	·85457468	15600
15680	2·291	0·8601187	·77113861	2·131	0·8285365	·85682068	15680
15760	2·287	0·8593584	·77316001	2·127	0·8277968	·85906668	15760
15840	2·283	0·8585994	·77518141	2·124	0·8270624	·86131268	15840
15920	2·279	0·8578388	·77720281	2·120	0·8263388	·86355868	15920
16000	2·276	0·8570895	·77922421	2·116	0·8256094	·86580468	16000
16080	2·272	0·8563451	·78124561	2·113	0·8248905	·86805068	16080
16160	2·268	0·8556059	·78326701	2·109	0·8241767	·87029668	16160
16240	2·264	0·8548718	·78528841	2·106	0·8234680	·87254268	16240
16320	2·260	0·8541428	·78730981	2·103	0·8227643	·87478868	16320
16400	2·256	0·8534185	·78933121	2·099	0·8220654	·87703468	16400
16480	2·253	0·8526992	·79135261	2·096	0·8213714	·87928068	16480
16560	2·249	0·8519848	·79337401	2·093	0·8206822	·88152668	16560
16640	2·245	0·8512752	·79539541	2·089	0·8199978	·88377268	16640
16720	2·242	0·8505705	·79741681	2·086	0·8193182	·88601868	16720
16800	2·238	0·8498704	·79943821	2·083	0·8186432	·88826468	16800
16880	2·234	0·8491749	·80145961	2·080	0·8179728	·89051068	16880
16900	2·231	0·8484841	·80348101	2·076	0·8173069	·89275668	16900
17000	2·229	0·8481402	·80449171	2·075	0·8169756	·89387968	17000
17040	2·227	0·8477978	·80550241	2·073	0·8166455	·89500268	17040
17120	2·224	0·8471160	·80752381	2·070	0·8159886	·89724868	17120
17200	2·220	0·8464387	·80954521	2·067	0·8153363	·89949468	17200
17280	2·217	0·8457659	·81156661	2·064	0·8146888	·90174068	17280
17360	2·214	0·8450975	·81358801	2·061	0·8140448	·90398668	17360
17440	2·210	0·8444384	·81560941	2·058	0·8134054	·90623268	17440
17520	2·207	0·8437736	·81763081	2·055	0·8127704	·90847868	17520
17600	2·204	0·8431182	·81965221	2·052	0·8121397	·91072468	17600
17680	2·200	0·8424670	·82167361	2·049	0·8115131	·91297068	17680
17760	2·197	0·8418199	·82369501	2·046	0·8108906	·91521668	17760
17840	2·194	0·8411770	·82571641	2·043	0·8102723	·91746268	17840
17920	2·190	0·8405380	·82773781	2·040	0·8096579	·91970868	17920
18000	2·187	0·8399034	·82975921	2·037	0·8090477	·92195468	18000
18080	2·184	0·8392728	·83178061	2·034	0·8084415	·92420068	18080
18160	2·181	0·8386461	·83380201	2·032	0·8078392	·92644668	18160
18240	2·178	0·8380233	·83582341	2·029	0·8072408	·92869268	18240
18320	2·175	0·8374044	·83784481	2·026	0·8066464	·93093868	18320
18400	2·172	0·8367894	·83986621	2·023	0·8060558	·93318468	18400
18480	2·169	0·8361783	·84188761	2·021	0·8054690	·93543068	18480
18560	2·166	0·8355711	·84390901	2·018	0·8048860	·93767668	18560
18640	2·163	0·8349676	·84593041	2·015	0·8043067	·93992268	18640
18720	2·160	0·8343679	·84795181	2·012	0·8037310	·94216868	18720
18800	2·157	0·8337719	·84997321	2·010	0·8031591	·94441468	18800

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
15000	2.028	0.8071739	.92150264	1.916	0.2824984	1.0052756	15000
15040	2.027	0.8067919	.92273794	1.915	0.2821279	1.0066232	15040
15120	2.023	0.8060821	.92520854	1.912	0.2818910	1.0098184	15120
15200	2.020	0.8052781	.92767914	1.908	0.2806599	1.0120186	15200
15280	2.016	0.8045299	.93014974	1.905	0.2799344	1.0147088	15280
15360	2.013	0.8037872	.93262084	1.902	0.2792145	1.0174040	15360
15440	2.009	0.8030501	.93509094	1.899	0.2785001	1.0200992	15440
15520	2.006	0.8023184	.93756154	1.896	0.2777910	1.0227944	15520
15600	2.003	0.8015921	.94003214	1.893	0.2770874	1.0254896	15600
15680	1.999	0.8008711	.94250274	1.890	0.2763891	1.0281848	15680
15760	1.996	0.8001554	.94497334	1.887	0.2756961	1.0308800	15760
15840	1.993	0.2994450	.94744394	1.884	0.2750082	1.0335752	15840
15920	1.989	0.2987398	.94991454	1.881	0.2743255	1.0362704	15920
16000	1.986	0.2980398	.95238514	1.878	0.2736480	1.0389656	16000
16080	1.983	0.2973448	.95485574	1.875	0.2729754	1.0416608	16080
16160	1.980	0.2966549	.95732634	1.872	0.2723078	1.0443560	16160
16240	1.977	0.2959700	.95979694	1.869	0.2716452	1.0470512	16240
16320	1.974	0.2952899	.96226754	1.866	0.2709874	1.0497464	16320
16400	1.971	0.2946147	.96473814	1.864	0.2703345	1.0524416	16400
16480	1.968	0.2939443	.96720874	1.861	0.2696863	1.0551368	16480
16560	1.965	0.2932787	.96967934	1.858	0.2690429	1.0578320	16560
16640	1.962	0.2926179	.97214994	1.855	0.2684042	1.0605272	16640
16720	1.959	0.2919618	.97462054	1.853	0.2677701	1.0632224	16720
16800	1.956	0.2913103	.97709114	1.850	0.2671405	1.0659176	16800
16880	1.953	0.2906633	.97956174	1.847	0.2665156	1.0686128	16880
16900	1.950	0.2900209	.98203234	1.845	0.2658952	1.0713080	16900
17000	1.949	0.2897013	.98326764	1.843	0.2655865	1.0726556	17000
17040	1.947	0.2893830	.98450294	1.842	0.2652791	1.0740032	17040
17120	1.944	0.2887495	.98697354	1.839	0.2646675	1.0766984	17120
17200	1.941	0.2881204	.98944414	1.837	0.2640604	1.0793936	17200
17280	1.939	0.2874956	.99191474	1.834	0.2634574	1.0820888	17280
17360	1.936	0.2868752	.99438534	1.832	0.2628587	1.0847840	17360
17440	1.933	0.2862591	.99685594	1.829	0.2622643	1.0874792	17440
17520	1.930	0.2856472	.99932654	1.827	0.2616741	1.0901744	17520
17600	1.928	0.2850396	1.0017971	1.824	0.2610881	1.0928696	17600
17680	1.925	0.2844360	1.0042677	1.822	0.2605062	1.0955648	17680
17760	1.922	0.2838365	1.0067383	1.819	0.2599283	1.0982600	17760
17840	1.920	0.2832412	1.0092089	1.817	0.2593544	1.1009552	17840
17920	1.917	0.2826498	1.0116795	1.815	0.2587846	1.1036504	17920
18000	1.915	0.2820625	1.0141501	1.812	0.2582187	1.1063456	18000
18080	1.912	0.2814792	1.0166207	1.810	0.2576568	1.1090408	18080
18160	1.909	0.2808997	1.0190913	1.808	0.2570987	1.1117360	18160
18240	1.907	0.2803241	1.0215619	1.805	0.2565444	1.1144312	18240
18320	1.904	0.2797524	1.0240325	1.803	0.2559940	1.1171264	18320
18400	1.902	0.2791845	1.0265031	1.801	0.2554474	1.1198216	18400
18480	1.899	0.2786208	1.0289737	1.798	0.2549045	1.1225168	18480
18560	1.897	0.2780598	1.0314443	1.796	0.2543652	1.1252120	18560
18640	1.895	0.2775031	1.0339149	1.794	0.2538296	1.1279072	18640
18720	1.892	0.2769502	1.0363855	1.792	0.2532977	1.1306024	18720
18800	1.890	0.2764008	1.0388561	1.790	0.2527695	1.1332976	18800

Sine of Inclination (1 over)	$n = \cdot 013$			$n = \cdot 014$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
15000	1·822	0·2604649	1·0890486	1·740	0·2406464	1·1728215	15000
15040	1·820	0·2601051	1·0905085	1·739	0·2402969	1·1748987	15040
15120	1·817	0·2598899	1·0984288	1·736	0·2396021	1·1775381	15120
15200	1·814	0·2586803	1·0968481	1·738	0·2389129	1·1806825	15200
15280	1·811	0·2579762	1·0992679	1·731	0·2382292	1·1838269	15280
15360	1·808	0·2572777	1·1021877	1·728	0·2375510	1·1869713	15360
15440	1·805	2·2565848	1·1051075	1·725	0·2368782	1·1901157	15440
15520	1·803	0·2558973	1·1080273	1·723	0·2362107	1·1932601	15520
15600	1·800	0·2552151	1·1109471	1·720	0·2355485	1·1964045	15600
15680	1·797	0·2545380	1·1138669	1·717	0·2348914	1·1995489	15680
15760	1·794	0·2538661	1·1167867	1·715	0·2342396	1·2026933	15760
15840	1·791	0·2531994	1·1197065	1·712	0·2335930	1·2058377	15840
15920	1·789	0·2525379	1·1226263	1·710	0·2329514	1·2089821	15920
16000	1·786	0·2518815	1·1255461	1·707	0·2323149	1·2121265	16000
16080	1·783	0·2512300	1·1284659	1·705	0·2316833	1·2152709	16080
16160	1·781	0·2505885	1·1313857	1·702	0·2310566	1·2184153	16160
16240	1·778	0·2499419	1·1343055	1·700	0·2304348	1·2215597	16240
16320	1·775	0·2493051	1·1372253	1·698	0·2298178	1·2247041	16320
16400	1·773	0·2486731	1·1401451	1·695	0·2292055	1·2278485	16400
16480	1·770	0·2480458	1·1430648	1·693	0·2285979	1·2309929	16480
16560	1·768	0·2474232	1·1459847	1·691	0·2279949	1·2341373	16560
16640	1·765	0·2468053	1·1489045	1·688	0·2273966	1·2372817	16640
16720	1·763	0·2461921	1·1518243	1·686	0·2268029	1·2404261	16720
16800	1·760	0·2455834	1·1547441	1·684	0·2262136	1·2435705	16800
16880	1·758	0·2449791	1·1576639	1·681	0·2256288	1·2467149	16880
16900	1·755	0·2443792	1·1605837	1·679	0·2250485	1·2498593	16900
17000	1·754	0·2440808	1·1620436	1·678	0·2247599	1·2514315	17000
17040	1·753	0·2437887	1·1635035	1·677	0·2244725	1·2530037	17040
17120	1·751	0·2431926	1·1664233	1·675	0·2239008	1·2561481	17120
17200	1·748	0·2426059	1·1693431	1·672	0·2233334	1·2592925	17200
17280	1·746	0·2420284	1·1722629	1·670	0·2227702	1·2624369	17280
17360	1·744	0·2414452	1·1751827	1·668	0·2222113	1·2655813	17360
17440	1·741	0·2408713	1·1781025	1·666	0·2216565	1·2687257	17440
17520	1·739	0·2403016	1·1810223	1·664	0·2211058	1·2718701	17520
17600	1·737	0·2397360	1·1839421	1·662	0·2205593	1·2750145	17600
17680	1·734	0·2391743	1·1868619	1·660	0·2200187	1·2781589	17680
17760	1·732	0·2386166	1·1897817	1·658	0·2194781	1·2813033	17760
17840	1·730	0·2380629	1·1927015	1·656	0·2189435	1·2844477	17840
17920	1·728	0·2375132	1·1956213	1·654	0·2184123	1·2875921	17920
18000	1·726	0·2369675	1·1985411	1·652	0·2178861	1·2907365	18000
18080	1·724	0·2364257	1·2014609	1·650	0·2173632	1·2938809	18080
18160	1·721	0·2358877	1·2043807	1·648	0·2168440	1·2970253	18160
18240	1·719	0·2353535	1·2073005	1·646	0·2163286	1·3001697	18240
18320	1·717	0·2348281	1·2102203	1·644	0·2158170	1·3033141	18320
18400	1·715	0·2342964	1·2131401	1·642	0·2153090	1·3064585	18400
18480	1·713	0·2337738	1·2160599	1·640	0·2148047	1·3096029	18480
18560	1·711	0·2332539	1·2189797	1·638	0·2143040	1·3127473	18560
18640	1·709	0·2327380	1·2218995	1·636	0·2138069	1·3158917	18640
18720	1·707	0·2322260	1·2248193	1·634	0·2133134	1·3190361	18720
18800	1·705	0·2317174	1·2277391	1·632	0·2128234	1·3221805	18800

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
15000	1.670	0.2227070	1.2565945	1.554	0.1914422	1.4241404	15000
15040	1.669	0.2228671	1.2582790	1.558	0.1911201	1.4260495	15040
15120	1.666	0.2216915	1.2616480	1.551	0.1904800	1.4298677	15120
15200	1.668	0.2210215	1.2650170	1.548	0.1898454	1.4336859	15200
15280	1.661	0.2208570	1.2683860	1.546	0.1892162	1.4375041	15280
15360	1.658	0.2196979	1.2717550	1.544	0.1885924	1.4413228	15360
15440	1.656	0.2190442	1.2751240	1.542	0.1879789	1.4451405	15440
15520	1.658	0.2188958	1.2784980	1.539	0.1873607	1.4489587	15520
15600	1.651	0.2177527	1.2818620	1.537	0.1867526	1.4527769	15600
15680	1.649	0.2171147	1.2852810	1.535	0.1861495	1.4565951	15680
15760	1.646	0.2164818	1.2886000	1.538	0.1855515	1.4604133	15760
15840	1.644	0.2158540	1.2919690	1.531	0.1849585	1.4642315	15840
15920	1.641	0.2152318	1.2953880	1.529	0.1843706	1.4680497	15920
16000	1.639	0.2146136	1.2987070	1.527	0.1837876	1.4718679	16000
16080	1.637	0.2140007	1.3020760	1.525	0.1832098	1.4756861	16080
16160	1.635	0.2133927	1.3054450	1.528	0.1826358	1.4795043	16160
16240	1.632	0.2127896	1.3088140	1.521	0.1820671	1.4833225	16240
16320	1.630	0.2121913	1.3121880	1.519	0.1815081	1.4871407	16320
16400	1.628	0.2115976	1.3155520	1.517	0.1809486	1.4909589	16400
16480	1.626	0.2110086	1.3189210	1.515	0.1803887	1.4947771	16480
16560	1.623	0.2104242	1.3222900	1.513	0.1798384	1.4985953	16560
16640	1.621	0.2098443	1.3256590	1.511	0.1792926	1.5024135	16640
16720	1.619	0.2092690	1.3290280	1.509	0.1787513	1.5062317	16720
16800	1.617	0.2086982	1.3323970	1.507	0.1782144	1.5100499	16800
16880	1.615	0.2081318	1.3357660	1.506	0.1776818	1.5138681	16880
16960	1.613	0.2075697	1.3391350	1.504	0.1771534	1.5176863	16960
17000	1.612	0.2072903	1.3408195	1.503	0.1768908	1.5195954	17000
17040	1.611	0.2070120	1.3425040	1.502	0.1766294	1.5215045	17040
17120	1.609	0.2064586	1.3458730	1.500	0.1761096	1.5253227	17120
17200	1.607	0.2059094	1.3492420	1.498	0.1755940	1.5291409	17200
17280	1.605	0.2053645	1.3526110	1.497	0.1750824	1.5329591	17280
17360	1.603	0.2048237	1.3559800	1.495	0.1745749	1.5367773	17360
17440	1.601	0.2042870	1.3593490	1.493	0.1740715	1.5405955	17440
17520	1.599	0.2037544	1.3627180	1.491	0.1735721	1.5444137	17520
17600	1.597	0.2032259	1.3660870	1.490	0.1730768	1.5482319	17600
17680	1.595	0.2027014	1.3694560	1.488	0.1725858	1.5520501	17680
17760	1.598	0.2021807	1.3728250	1.486	0.1720976	1.5558683	17760
17840	1.591	0.2016639	1.3761940	1.485	0.1716138	1.5596865	17840
17920	1.589	0.2011511	1.3795630	1.483	0.1711388	1.5635047	17920
18000	1.587	0.2006422	1.3829320	1.481	0.1706577	1.5673229	18000
18080	1.585	0.2001371	1.3863010	1.480	0.1701858	1.5711411	18080
18160	1.584	0.1996358	1.3896700	1.478	0.1697166	1.5749593	18160
18240	1.582	0.1991381	1.3930390	1.477	0.1692516	1.5787775	18240
18320	1.580	0.1986442	1.3964080	1.475	0.1687902	1.5825957	18320
18400	1.578	0.1981539	1.3997770	1.473	0.1683323	1.5864139	18400
18480	1.576	0.1976672	1.4031460	1.471	0.1678779	1.5902321	18480
18560	1.575	0.1971841	1.4065150	1.470	0.1674271	1.5940503	18560
18640	1.573	0.1967046	1.4098840	1.469	0.1669798	1.5978685	18640
18720	1.571	0.1962286	1.4132530	1.467	0.1665359	1.6016867	18720
18800	1.569	0.1957561	1.4166220	1.466	0.1660955	1.6055049	18800

Sine of Inclina- tion (1 over)	$n = \cdot 020$			$n = \cdot 0225$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
15000	1·428	0·1588494	1·6754594	1·841	0·1275298	1·8848918	15000
15040	1·422	0·1580508	1·6777054	1·840	0·1272478	1·8874185	15040
15120	1·421	0·1524576	1·6821974	1·839	0·1266887	1·8924720	15120
15200	1·419	0·1518697	1·6866894	1·837	0·1261849	1·8975255	15200
15280	1·417	0·1512872	1·6911814	1·835	0·1255864	1·9025790	15280
15360	1·415	0·1507099	1·6956784	1·834	0·1250481	1·9076825	15360
15440	1·418	0·1501878	1·7001654	1·832	0·1245049	1·9126860	15440
15520	1·411	0·1495708	1·7046574	1·830	0·1239716	1·9177895	15520
15600	1·409	0·1490089	1·7091494	1·829	0·1234482	1·9227980	15600
15680	1·408	0·1484519	1·7136414	1·827	0·1229198	1·9278465	15680
15760	1·406	0·1478999	1·7181384	1·826	0·1224012	1·9329000	15760
15840	1·404	0·1473528	1·7226254	1·824	0·1218875	1·9379535	15840
15920	1·402	0·1468106	1·7271174	1·822	0·1213786	1·9430070	15920
16000	1·400	0·1462782	1·7316094	1·821	0·1208744	1·9480605	16000
16080	1·399	0·1457404	1·7361014	1·819	0·1203747	1·9531140	16080
16160	1·397	0·1452128	1·7405984	1·818	0·1198796	1·9581675	16160
16240	1·395	0·1446889	1·7450854	1·816	0·1193891	1·9632210	16240
16320	1·394	0·1441700	1·7495774	1·815	0·1189032	1·9682745	16320
16400	1·392	0·1436557	1·7540694	1·813	0·1184216	1·9733280	16400
16480	1·390	0·1431458	1·7585614	1·812	0·1179444	1·9783815	16480
16560	1·389	0·1426408	1·7630534	1·811	0·1174715	1·9834350	16560
16640	1·387	0·1421392	1·7675454	1·809	0·1170080	1·9884885	16640
16720	1·386	0·1416425	1·7720374	1·808	0·1165383	1·9935420	16720
16800	1·384	0·1411501	1·7765294	1·806	0·1160787	1·9985955	16800
16880	1·382	0·1406619	1·7810214	1·805	0·1156228	2·0036490	16880
16960	1·381	0·1401779	1·7855184	1·804	0·1151710	2·0087025	16960
17000	1·380	0·1399884	1·7877594	1·803	0·1149465	2·0112293	17000
17040	1·379	0·1396980	1·7900054	1·802	0·1147238	2·0137560	17040
17120	1·378	0·1392223	1·7944974	1·801	0·1142796	2·0188095	17120
17200	1·376	0·1387507	1·7989894	1·800	0·1138399	2·0238630	17200
17280	1·375	0·1382881	1·8034814	1·298	0·1134041	2·0289165	17280
17360	1·373	0·1378195	1·8079734	1·297	0·1129722	2·0339700	17360
17440	1·372	0·1373598	1·8124654	1·296	0·1225442	2·0390235	17440
17520	1·371	0·1369040	1·8169574	1·295	0·1121200	2·0440770	17520
17600	1·369	0·1364521	1·8214494	1·298	0·1116997	2·0491305	17600
17680	1·368	0·1360040	1·8259414	1·292	0·1112881	2·0541840	17680
17760	1·366	0·1355596	1·8304334	1·291	0·1108701	2·0592375	17760
17840	1·365	0·1351189	1·8349254	1·290	0·1104607	2·0642910	17840
17920	1·364	0·1346820	1·8394174	1·288	0·1100550	2·0693445	17920
18000	1·362	0·1342489	1·8439094	1·287	0·1096530	2·0743980	18000
18080	1·361	0·1338194	1·8484014	1·286	0·1092546	2·0794515	18080
18160	1·360	0·1333984	1·8528934	1·285	0·1088596	2·0845050	18160
18240	1·358	0·1329710	1·8573854	1·284	0·1084681	2·0895585	18240
18320	1·357	0·1325521	1·8618774	1·283	0·1080800	2·0946120	18320
18400	1·356	0·1321367	1·8663694	1·281	0·1076953	2·0996655	18400
18480	1·354	0·1317247	1·8708614	1·280	0·1073140	2·1047190	18480
18560	1·353	0·1313162	1·8753534	1·279	0·1069361	2·1097725	18560
18640	1·352	0·1309110	1·8798454	1·278	0·1065615	2·1148260	18640
18720	1·351	0·1305092	1·8843374	1·277	0·1061901	2·1198795	18720
18800	1·349	0·1301108	1·8888294	1·276	0·1058220	2·1249330	18800

Sine of Inclina- tion (1 over)	n = .0250			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
15000	1.276	0.1057076	2.0948242	1.222	0.0870001	2.8087566	15000
15040	1.275	0.1054418	2.0971817	1.221	0.0867476	2.8068449	15040
15120	1.273	0.1049127	2.1027467	1.220	0.0862465	2.8130214	15120
15200	1.272	0.1043894	2.1088617	1.218	0.0857505	2.8191979	15200
15280	1.270	0.1038712	2.1139767	1.217	0.0852595	2.8253744	15280
15360	1.269	0.1033581	2.1195917	1.216	0.0847785	2.8315509	15360
15440	1.267	0.1028500	2.1252067	1.214	0.0842925	2.8377274	15440
15520	1.266	0.1023469	2.1308217	1.213	0.0838164	2.8439089	15520
15600	1.264	0.1018487	2.1364367	1.211	0.0833451	2.8500804	15600
15680	1.263	0.1013552	2.1420517	1.210	0.0828784	2.8562569	15680
15760	1.261	0.1008665	2.1476667	1.209	0.0824164	2.8624384	15760
15840	1.260	0.1003825	2.1532817	1.208	0.0819591	2.8686099	15840
15920	1.259	0.0999032	2.1588967	1.206	0.0815065	2.8747864	15920
16000	1.257	0.0994286	2.1645117	1.205	0.0810585	2.8809629	16000
16080	1.256	0.0989584	2.1701267	1.204	0.0806148	2.8871394	16080
16160	1.255	0.0984928	2.1757417	1.203	0.0801755	2.8933159	16160
16240	1.253	0.0980317	2.1813567	1.202	0.0797407	2.8994924	16240
16320	1.252	0.0975750	2.1869717	1.200	0.0793102	2.4056689	16320
16400	1.251	0.0971225	2.1925867	1.199	0.0788840	2.4118454	16400
16480	1.249	0.0966744	2.1982017	1.198	0.0784620	2.4180219	16480
16560	1.248	0.0962306	2.2038167	1.197	0.0780442	2.4241984	16560
16640	1.247	0.0957910	2.2094317	1.196	0.0776306	2.4303749	16640
16720	1.246	0.0953557	2.2150467	1.195	0.0772211	2.4365514	16720
16800	1.244	0.0949244	2.2206617	1.193	0.0768156	2.4427279	16800
16880	1.243	0.0944972	2.2262767	1.192	0.0764141	2.4489044	16880
16900	1.242	0.0940741	2.2318917	1.191	0.0760166	2.4550809	16900
17000	1.241	0.0938640	2.2346992	1.191	0.0758192	2.4581691	17000
17040	1.241	0.0936549	2.2375067	1.190	0.0756280	2.4612574	17040
17120	1.239	0.0932397	2.2431217	1.189	0.0752332	2.4674339	17120
17200	1.238	0.0928284	2.2487367	1.188	0.0748473	2.4736104	17200
17280	1.237	0.0924209	2.2543517	1.187	0.0744651	2.4797869	17280
17360	1.236	0.0920173	2.2599667	1.186	0.0740868	2.4859634	17360
17440	1.235	0.0916175	2.2655817	1.185	0.0737122	2.4921399	17440
17520	1.234	0.0912213	2.2711967	1.184	0.0733413	2.4983164	17520
17600	1.233	0.0908290	2.2768117	1.183	0.0729741	2.5044929	17600
17680	1.232	0.0904403	2.2824267	1.182	0.0726104	2.5106694	17680
17760	1.230	0.0900552	2.2880417	1.181	0.0722502	2.5168459	17760
17840	1.229	0.0896737	2.2936567	1.180	0.0718935	2.5230224	17840
17920	1.228	0.0892957	2.2992717	1.179	0.0715403	2.5291989	17920
18000	1.227	0.0889213	2.3048867	1.178	0.0711906	2.5353754	18000
18080	1.226	0.0885505	2.3105017	1.177	0.0708444	2.5415519	18080
18160	1.225	0.0881830	2.3161167	1.176	0.0705015	2.5477284	18160
18240	1.224	0.0878189	2.3217317	1.175	0.0701620	2.5539049	18240
18320	1.223	0.0874582	2.3273467	1.174	0.0698258	2.5600814	18320
18400	1.222	0.0871009	2.3329617	1.174	0.0694928	2.5662579	18400
18480	1.221	0.0867468	2.3385767	1.173	0.0691630	2.5724344	18480
18560	1.220	0.0863960	2.3441917	1.172	0.0688364	2.5786109	18560
18640	1.219	0.0860484	2.3498067	1.171	0.0685130	2.5847874	18640
18720	1.218	0.0857040	2.3554217	1.170	0.0681928	2.5909639	18720
18800	1.217	0.0853629	2.3610367	1.169	0.0678757	2.5971404	18800



FOR SPECIAL INCLINATIONS AND VALUES OF (n).

Sine of Inclination (1 over)	n = .030			n = .035			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
15000	1.177	0.0707704	2.5181890	1.107	0.0439741	2.9820589	15000
15040	1.176	0.0705803	2.5165580	1.106	0.0437556	2.9859844	15040
15120	1.175	0.0700589	2.5282960	1.105	0.0438221	2.9438454	15120
15200	1.174	0.0696826	2.5300340	1.104	0.0428935	2.9517064	15200
15280	1.173	0.0691168	2.5367720	1.103	0.0424698	2.9595674	15280
15360	1.171	0.0686549	2.5435100	1.102	0.0420509	2.9674284	15360
15440	1.170	0.0681988	2.5502480	1.101	0.0416368	2.9752894	15440
15520	1.169	0.0677465	2.5569860	1.100	0.0412272	2.9831504	15520
15600	1.168	0.0672995	2.5637240	1.099	0.0408223	2.9910114	15600
15680	1.166	0.0668570	2.5704620	1.098	0.0404218	2.9988724	15680
15760	1.165	0.0664192	2.5772000	1.097	0.0400259	3.0067334	15760
15840	1.164	0.0659860	2.5839380	1.096	0.0396344	3.0145944	15840
15920	1.163	0.0655574	2.5906760	1.095	0.0392473	3.0224554	15920
16000	1.162	0.0651332	2.5974140	1.094	0.0388646	3.0303164	16000
16080	1.161	0.0647134	2.6041520	1.093	0.0384860	3.0381774	16080
16160	1.160	0.0642979	2.6108900	1.092	0.0381118	3.0460384	16160
16240	1.158	0.0638868	2.6176280	1.091	0.0377418	3.0538994	16240
16320	1.157	0.0634800	2.6243660	1.090	0.0373759	3.0617604	16320
16400	1.156	0.0630773	2.6311040	1.089	0.0370140	3.0696214	16400
16480	1.155	0.0626788	2.6378420	1.088	0.0366562	3.0774824	16480
16560	1.154	0.0622844	2.6445800	1.087	0.0363024	3.0853434	16560
16640	1.153	0.0618941	2.6513180	1.086	0.0359526	3.0932044	16640
16720	1.152	0.0615080	2.6580560	1.085	0.0356067	3.1010654	16720
16800	1.151	0.0611258	2.6647940	1.085	0.0352646	3.1089264	16800
16880	1.150	0.0607475	2.6715320	1.084	0.0349263	3.1167874	16880
16900	1.149	0.0603781	2.6782700	1.083	0.0345918	3.1246484	16900
17000	1.149	0.0601872	2.6816390	1.082	0.0344259	3.1285789	17000
17040	1.148	0.0600025	2.6850080	1.082	0.0342610	3.1325094	17040
17120	1.147	0.0596357	2.6917460	1.081	0.0339339	3.1403704	17120
17200	1.146	0.0592727	2.6984840	1.080	0.0336105	3.1482314	17200
17280	1.145	0.0589133	2.7052220	1.080	0.0332906	3.1560924	17280
17360	1.144	0.0585577	2.7119600	1.079	0.0329744	3.1639534	17360
17440	1.143	0.0582058	2.7186980	1.078	0.0326616	3.1718144	17440
17520	1.143	0.0578575	2.7254360	1.077	0.0323524	3.1796754	17520
17600	1.142	0.0575128	2.7321740	1.077	0.0320467	3.1875364	17600
17680	1.141	0.0571716	2.7389120	1.076	0.0317443	3.1953974	17680
17760	1.140	0.0568338	2.7456500	1.075	0.0314452	3.2032584	17760
17840	1.139	0.0564995	2.7523880	1.074	0.0311495	3.2111194	17840
17920	1.138	0.0561687	2.7591260	1.073	0.0308571	3.2189804	17920
18000	1.137	0.0558413	2.7658640	1.073	0.0305681	3.2268414	18000
18080	1.136	0.0555172	2.7726020	1.072	0.0302828	3.2347024	18080
18160	1.136	0.0551964	2.7793400	1.072	0.0299997	3.2425634	18160
18240	1.135	0.0548789	2.7860780	1.071	0.0297202	3.2504244	18240
18320	1.134	0.0545646	2.7928160	1.070	0.0294438	3.2582854	18320
18400	1.133	0.0542535	2.7995540	1.069	0.0291705	3.2661464	18400
18480	1.132	0.0539456	2.8062920	1.069	0.0289003	3.2740074	18480
18560	1.131	0.0536409	2.8130300	1.068	0.0286331	3.2818684	18560
18640	1.131	0.0533392	2.8197680	1.068	0.0283689	3.2897294	18640
18720	1.130	0.0530406	2.8265060	1.067	0.0281076	3.2975904	18720
18800	1.129	0.0527452	2.8332440	1.066	0.0278493	3.3054514	18800

n = .050							
Sine of Inclina- tion (1 over)	N	log. N	D	Sine of Inclina- tion (1 over)	N	log. N	D
15000	.9798	1.9911887	4.1886484	16900	.9687	1.9839888	4.4637884
15040	.9794	1.9909617	4.1942684	17000	.9684	1.9838151	4.4693984
15120	.9786	1.9906210	4.2054984	17040	.9681	1.9836980	4.4750184
15200	.9779	1.9902849	4.2167284	17120	.9626	1.9834511	4.4862484
15280	.9771	1.9899538	4.2279534	17200	.9621	1.9832126	4.4974784
15360	.9764	1.9896262	4.2391834	17280	.9616	1.9829772	4.5087084
15440	.9757	1.9893035	4.2504134	17360	.9611	1.9827452	4.5199384
15520	.9750	1.9889852	4.2616434	17440	.9606	1.9825164	4.5311684
15600	.9743	1.9886711	4.2728734	17520	.9601	1.9822908	4.5423984
15680	.9736	1.9883612	4.2841034	17600	.9596	1.9820685	4.5536284
15760	.9729	1.9880555	4.2953384	17680	.9591	1.9818498	4.5648584
15840	.9722	1.9877539	4.3065684	17760	.9586	1.9816332	4.5760884
15920	.9715	1.9874565	4.3177934	17840	.9581	1.9814201	4.5873184
16000	.9709	1.9871631	4.3290234	17920	.9577	1.9812100	4.5985484
16080	.9702	1.9868736	4.3402534	18000	.9572	1.9810080	4.6097784
16160	.9696	1.9865880	4.3514834	18080	.9568	1.9807990	4.6210084
16240	.9690	1.9863063	4.3627134	18160	.9563	1.9805979	4.6322384
16320	.9683	1.9860285	4.3739434	18240	.9559	1.9803997	4.6434684
16400	.9677	1.9857544	4.3851734	18320	.9554	1.9802043	4.6546984
16480	.9671	1.9854841	4.3964034	18400	.9550	1.9800117	4.6659284
16560	.9665	1.9852175	4.4076334	18480	.9546	1.9798219	4.6771584
16640	.9659	1.9849545	4.4188634	18560	.9542	1.9796349	4.6883884
16720	.9654	1.9846952	4.4300934	18640	.9538	1.9794506	4.6996184
16800	.9648	1.9844394	4.4413234	18720	.9534	1.9792690	4.7108484
16880	.9642	1.9841871	4.4525534	18800	.9530	1.9790901	4.7220784

FOR SPECIAL INCLINATIONS AND VALUES OF (n) .



Sine of Inclina- tion (1 over)	$n = \cdot 009$			$n = \cdot 010$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
18880	2:154	0:8881797	85199461	2:007	0:8025909	94666068	18880
18960	2:151	0:8825911	85401601	2:005	0:8020268	94890668	18960
19000	2:149	0:8822981	85502671	2:003	0:8017458	95002968	19000
19040	2:148	0:8820060	85603741	2:002	0:8014658	95115268	19040
19120	2:145	0:8814245	85805891	1:999	0:8009078	95389868	19120
19200	2:142	0:8808466	86008021	1:997	0:8008538	95564468	19200
19280	2:139	0:8802722	86210161	1:994	0:2998038	95789068	19280
19360	2:136	0:8797018	86412301	1:992	0:2992562	96018668	19360
19440	2:134	0:8791389	86614441	1:989	0:2987126	96238268	19440
19520	2:131	0:8785698	86816581	1:987	0:2981728	96462868	19520
19600	2:128	0:8780092	87018721	1:984	0:2976354	96687468	19600
19680	2:125	0:8774519	87220861	1:982	0:2971018	96912068	19680
19760	2:123	0:8768979	87423001	1:980	0:2965715	97136668	19760
19840	2:120	0:8763474	87625141	1:977	0:2960446	97361268	19840
19920	2:117	0:8758000	87827281	1:975	0:2955208	97585868	19920
20000	2:115	0:8752560	88029421	1:972	0:2950008	97810468	20000
20080	2:112	0:8747152	88231561	1:970	0:2944830	98035068	20080
20160	2:109	0:8741776	88433701	1:968	0:2939689	98259668	20160
20240	2:107	0:8736431	88635841	1:965	0:2934579	98484268	20240
20320	2:104	0:8731118	88837981	1:963	0:2929500	98708868	20320
20400	2:102	0:8725836	89040121	1:261	0:2924452	98933468	20400
20480	2:099	0:8720585	89242261	1:959	0:2919434	99158068	20480
20560	2:097	0:8715365	89444001	1:956	0:2914447	99382668	20560
20640	2:094	0:8710176	89646501	1:954	0:2909490	99607268	20640
20720	2:092	0:8705017	89848681	1:952	0:2904563	99831868	20720
20800	2:089	0:8199887	90050821	1:950	0:2899665	10005647	20800
20880	2:087	0:8194787	90252961	1:948	0:2894797	10028107	20880
20960	2:084	0:8189717	90455101	1:945	0:2889957	10050567	20960
21040	2:082	0:8184676	90657241	1:943	0:2885147	10073027	21040
21120	2:080	0:8179664	90859881	1:941	0:2880366	10095487	21120

Sine of Inclina- tion (1 over)	n = .011			n = .012			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
18880	1.887	0.2758551	1.0418267	1.787	0.2522447	1.1859928	18880
18960	1.885	0.2758129	1.0437978	1.785	0.2517235	1.1886880	18960
19000	1.884	0.2750431	1.0450826	1.784	0.2514643	1.1400356	19000
19040	1.883	0.2747748	1.0462679	1.783	0.2512058	1.1413832	19040
19120	1.880	0.2742891	1.0487385	1.781	0.2506916	1.1440784	19120
19200	1.878	0.2737074	1.0512091	1.779	0.2501808	1.1467736	19200
19280	1.876	0.2731791	1.0536797	1.777	0.2496734	1.1494688	19280
19360	1.874	0.2726542	1.0561503	1.775	0.2491693	1.1521640	19360
19440	1.871	0.2721329	1.0586209	1.773	0.2486687	1.1548592	19440
19520	1.869	0.2716148	1.0610915	1.770	0.2480714	1.1575544	19520
19600	1.867	0.2711001	1.0635621	1.769	0.2476774	1.1602496	19600
19680	1.865	0.2705886	1.0660327	1.767	0.2471866	1.1629448	19680
19760	1.862	0.2700803	1.0685033	1.765	0.2466990	1.1656400	19760
19840	1.860	0.2695755	1.0709739	1.763	0.2462147	1.1683352	19840
19920	1.858	0.2690737	1.0734445	1.761	0.2457335	1.1710304	19920
20000	1.856	0.2685752	1.0759151	1.759	0.2452555	1.1737256	20000
20080	1.854	0.2680798	1.0783857	1.757	0.2447805	1.1764208	20080
20160	1.852	0.2675875	1.0808563	1.755	0.2443087	1.1791160	20160
20240	1.850	0.2670983	1.0833269	1.753	0.2438399	1.1818112	20240
20320	1.848	0.2666122	1.0857975	1.751	0.2433742	1.1845064	20320
20400	1.846	0.2661292	1.0882681	1.749	0.2429116	1.1872016	20400
20480	1.844	0.2656492	1.0907387	1.748	0.2424519	1.1898968	20480
20560	1.842	0.2651722	1.0932093	1.746	0.2419951	1.1925920	20560
20640	1.840	0.2646981	1.0956799	1.744	0.2415412	1.1952872	20640
20720	1.838	0.2642280	1.0981505	1.742	0.2410903	1.1979824	20720
20800	1.836	0.2637589	1.1006211	1.740	0.2406423	1.2006776	20800
20880	1.834	0.2632936	1.1030917	1.739	0.2401972	1.2033728	20880
20960	1.832	0.2628312	1.1055623	1.737	0.2397549	1.2060680	20960
21040	1.829	0.2623717	1.1080329	1.735	0.2393154	1.2087632	21040
21120	1.828	0.2619150	1.1105035	1.733	0.2388787	1.2114584	21120

Sine of Inclination (1 over)	$n = .013$			$n = .014$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
18880	1.708	0.2812124	1.2806589	1.631	0.2123370	1.8258249	18880
18960	1.701	0.2807110	1.2385787	1.629	0.2118540	1.8284698	18960
19000	1.700	0.2804616	1.2350383	1.628	0.2116137	1.8300415	19000
19040	1.699	0.2802180	1.2364985	1.627	0.2113744	1.8316137	19040
19120	1.697	0.2297184	1.2394188	1.625	0.2108982	1.8347581	19120
19200	1.695	0.2292271	1.2423331	1.623	0.2104254	1.8379025	19200
19280	1.693	0.2287393	1.2452579	1.622	0.2099559	1.8410469	19280
19360	1.691	0.2282548	1.2481777	1.620	0.2094897	1.8441913	19360
19440	1.690	0.2277737	1.2510975	1.618	0.2090268	1.8473357	19440
19520	1.688	0.2272958	1.2540173	1.616	0.2085671	1.8504801	19520
19600	1.686	0.2268212	1.2569371	1.615	0.2081107	1.8536245	19600
19680	1.684	0.2263497	1.2598569	1.613	0.2076575	1.8567639	19680
19760	1.682	0.2258813	1.2627767	1.611	0.2072073	1.8599138	19760
19840	1.680	0.2254162	1.2656965	1.610	0.2067604	1.8630577	19840
19920	1.679	0.2249542	1.2686163	1.608	0.2063165	1.8662021	19920
20000	1.677	0.2244954	1.2715361	1.606	0.2058757	1.8693465	20000
20080	1.675	0.2240397	1.2744559	1.605	0.2054379	1.8724909	20080
20160	1.673	0.2235871	1.2773757	1.603	0.2050032	1.8756353	20160
20240	1.672	0.2231375	1.2802955	1.602	0.2045715	1.8787797	20240
20320	1.670	0.2226908	1.2832153	1.600	0.2041428	1.8819241	20320
20400	1.668	0.2222471	1.2861351	1.599	0.2037170	1.8850685	20400
20480	1.667	0.2218064	1.2890549	1.597	0.2032941	1.8882129	20480
20560	1.665	0.2213687	1.2919747	1.595	0.2028741	1.8913573	20560
20640	1.663	0.2209389	1.2948945	1.594	0.2024571	1.8945017	20640
20720	1.662	0.2205020	1.2978143	1.592	0.2020428	1.8976461	20720
20800	1.660	0.2200728	1.3007341	1.591	0.2016314	1.4007905	20800
20880	1.658	0.2196464	1.3036539	1.589	0.2012227	1.4039349	20880
20960	1.657	0.2192229	1.3065737	1.588	0.2008168	1.4070793	20960
21040	1.655	0.2188022	1.3094935	1.586	0.2004137	1.4102237	21040
21120	1.653	0.2183842	1.3124133	1.585	0.2000138	1.4133681	21120

Sine of Inclina- tion (1 over)	n = .015			n = .017			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
18880	1.568	0.1952871	1.4199910	1.464	0.1656585	1.6098281	18880
18960	1.566	0.1948216	1.4238600	1.463	0.1652249	1.6131418	18960
19000	1.565	0.1945899	1.4250445	1.462	0.1650092	1.6150504	19000
19040	1.564	0.1943594	1.4267290	1.461	0.1647946	1.6169595	19040
19120	1.563	0.1939005	1.4300980	1.460	0.1643675	1.6207777	19120
19200	1.561	0.1934449	1.4334670	1.459	0.1639437	1.6245959	19200
19280	1.560	0.1929927	1.4368360	1.457	0.1635281	1.6284141	19280
19360	1.558	0.1925487	1.4402050	1.456	0.1631057	1.6322323	19360
19440	1.556	0.1920980	1.4435740	1.454	0.1626916	1.6360505	19440
19520	1.555	0.1916555	1.4469430	1.453	0.1622805	1.6398687	19520
19600	1.553	0.1912162	1.4503120	1.452	0.1618726	1.6436869	19600
19680	1.552	0.1907801	1.4536810	1.450	0.1614678	1.6475051	19680
19760	1.550	0.1903471	1.4570500	1.449	0.1610660	1.6513233	19760
19840	1.549	0.1899172	1.4604190	1.448	0.1606673	1.6551415	19840
19920	1.547	0.1894903	1.4637880	1.446	0.1602715	1.6589597	19920
20000	1.545	0.1890664	1.4671570	1.445	0.1598788	1.6627779	20000
20080	1.544	0.1886457	1.4705260	1.444	0.1594889	1.6665961	20080
20160	1.543	0.1882278	1.4738950	1.442	0.1591020	1.6704143	20160
20240	1.541	0.1878130	1.4772640	1.441	0.1587180	1.6742325	20240
20320	1.540	0.1874011	1.4806330	1.440	0.1583369	1.6780507	20320
20400	1.538	0.1869922	1.4840020	1.439	0.1579587	1.6818689	20400
20480	1.537	0.1865860	1.4873710	1.437	0.1575832	1.6856871	20480
20560	1.535	0.1861827	1.4907400	1.436	0.1572105	1.6895053	20560
20640	1.534	0.1857823	1.4941090	1.435	0.1568406	1.6933235	20640
20720	1.532	0.1853847	1.4974780	1.434	0.1564735	1.6971417	20720
20800	1.531	0.1849898	1.5008470	1.433	0.1561091	1.7009599	20800
20880	1.530	0.1845978	1.5042160	1.431	0.1557474	1.7047781	20880
20960	1.528	0.1842085	1.5075850	1.430	0.1553884	1.7085963	20960
21040	1.527	0.1838219	1.5109540	1.429	0.1550320	1.7124145	21040
21120	1.526	0.1834380	1.5143230	1.428	0.1546782	1.7162327	21120

Sine of Inclina- tion (1 over)	$n = \cdot 020$			$n = \cdot 0225$			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
18880	1·848	0·1297157	1·9888214	1·275	0·1054572	2·1299865	18880
18960	1·847	0·1298239	1·8978134	1·274	0·1050956	2·1850400	18960
19000	1·846	0·1291290	1·9000594	1·273	0·1049159	2·1875668	19000
19040	1·846	0·1289352	1·9023054	1·273	0·1047371	2·1400935	19040
19120	1·844	0·1285497	1·9067974	1·272	0·1048817	2·1451470	19120
19200	1·843	0·1281674	1·9112894	1·271	0·1040298	2·1502005	19200
19280	1·842	0·1277882	1·9157814	1·270	0·1036800	2·1552540	19280
19360	1·841	0·1274121	1·9202734	1·269	0·1033337	2·1603075	19360
19440	1·840	0·1270392	1·9247654	1·268	0·1029906	2·1653610	19440
19520	1·839	0·1266693	1·9292574	1·267	0·1026504	2·1704145	19520
19600	1·838	0·1263024	1·9337494	1·266	0·1023132	2·1754680	19600
19680	1·836	0·1259385	1·9382414	1·265	0·1019788	2·1805215	19680
19760	1·835	0·1255775	1·9427334	1·264	0·1016472	2·1855750	19760
19840	1·834	0·1252195	1·9472254	1·263	0·1013186	2·1906285	19840
19920	1·833	0·1248643	1·9517174	1·262	0·1009928	2·1956820	19920
20000	1·832	0·1245121	1·9562094	1·261	0·1006699	2·2007355	20000
20080	1·831	0·1241627	1·9607014	1·260	0·1003497	2·2057890	20080
20160	1·830	0·1238162	1·9651934	1·259	0·1000323	2·2108425	20160
20240	1·829	0·1234725	1·9696854	1·258	0·0997176	2·2158960	20240
20320	1·828	0·1231316	1·9741774	1·257	0·0994056	2·2209495	20320
20400	1·827	0·1227935	1·9786694	1·256	0·0990963	2·2260030	20400
20480	1·826	0·1224580	1·9831614	1·255	0·0987897	2·2310565	20480
20560	1·825	0·1221252	1·9876534	1·255	0·0984857	2·2361100	20560
20640	1·824	0·1217951	1·9921454	1·254	0·0981843	2·2411635	20640
20720	1·823	0·1214677	1·9966374	1·253	0·0978855	2·2462170	20720
20800	1·822	0·1211430	2·0011294	1·252	0·0975898	2·2512705	20800
20880	1·821	0·1208207	2·0056214	1·251	0·0972956	2·2563240	20880
20960	1·820	0·1205011	2·0101134	1·250	0·0970045	2·2613775	20960
21040	1·819	0·1201841	2·0146054	1·249	0·0967158	2·2664310	21040
21120	1·818	0·1198696	2·0190974	1·249	0·0964296	2·2714845	21120

Sine of Inclina- tion (1 over)	n = .025			n = .0275			Sine of Inclina- tion (1 over)
	N	log. N	D	N	log. N	D	
18880	1·216	0·0850249	2·8666517	1·168	0·0675617	2·6088169	18880
18960	1·215	0·0846901	2·8722667	1·167	0·0672508	2·6094984	18960
19000	1·215	0·0845238	2·8750742	1·167	0·0670964	2·6125816	19000
19040	1·214	0·0843588	2·8778817	1·167	0·0669429	2·6156699	19040
19120	1·213	0·0840295	2·8884967	1·166	0·0666879	2·6218464	19120
19200	1·213	0·0837087	2·8891117	1·165	0·0663858	2·6280229	19200
19280	1·212	0·0833810	2·8947267	1·164	0·0660367	2·6341994	19280
19360	1·211	0·0830612	2·4008417	1·163	0·0657405	2·6403759	19360
19440	1·210	0·0827444	2·4059567	1·163	0·0654473	2·6465524	19440
19520	1·209	0·0824805	2·4115717	1·162	0·0651568	2·6527289	19520
19600	1·208	0·0821195	2·4171867	1·161	0·0648692	2·6589054	19600
19680	1·207	0·0818113	2·4228017	1·160	0·0645843	2·6650819	19680
19760	1·206	0·0815058	2·4284167	1·160	0·0643021	2·6712584	19760
19840	1·206	0·0812033	2·4340317	1·159	0·0640229	2·6774349	19840
19920	1·205	0·0809034	2·4396467	1·158	0·0637461	2·6836114	19920
20000	1·204	0·0806064	2·4452617	1·157	0·0634722	2·6897879	20000
20080	1·203	0·0803120	2·4508767	1·157	0·0632009	2·6959644	20080
20160	1·202	0·0800204	2·4564917	1·156	0·0629322	2·7021409	20160
20240	1·202	0·0797814	2·4621067	1·155	0·0626661	2·7083174	20240
20320	1·201	0·0794451	2·4677217	1·155	0·0624026	2·7144939	20320
20400	1·200	0·0791614	2·4733367	1·154	0·0621416	2·7206704	20400
20480	1·199	0·0788802	2·4789517	1·153	0·0618832	2·7268469	20480
20560	1·198	0·0786016	2·4845667	1·152	0·0616273	2·7330234	20560
20640	1·198	0·0783256	2·4901817	1·152	0·0613738	2·7391999	20640
20720	1·197	0·0780522	2·4957967	1·151	0·0611229	2·7453764	20720
20800	1·196	0·0777812	2·5014117	1·150	0·0608744	2·7515529	20800
20880	1·195	0·0775127	2·5070267	1·150	0·0606283	2·7577294	20880
20960	1·195	0·0772466	2·5126417	1·149	0·0603846	2·7639059	20960
21040	1·194	0·0769830	2·5182567	1·149	0·0601433	2·7700824	21040
21120	1·193	0·0767217	2·5238717	1·148	0·0599048	2·7762589	21120

Sine of Inclination (1 over)	$n = \cdot 030$			$n = \cdot 035$			Sine of Inclination (1 over)
	N	log. N	D	N	log. N	D	
18880	1·128	0·0524527	2·8899820	1·066	0·0275941	3·8183124	18880
18960	1·128	0·0521638	2·8467200	1·065	0·0273416	3·8211784	18960
19000	1·127	0·0520196	2·8500890	1·065	0·0272164	3·8251088	19000
19040	1·127	0·0518767	2·8534580	1·064	0·0270920	3·8290844	19040
19120	1·126	0·0515982	2·8601960	1·064	0·0268452	3·8368954	19120
19200	1·125	0·0518124	2·8669840	1·063	0·0266011	3·8447564	19200
19280	1·125	0·0510845	2·8786720	1·063	0·0263598	3·8526174	19280
19360	1·124	0·0507594	2·8804100	1·062	0·0261212	3·8604784	19360
19440	1·123	0·0504873	2·8871480	1·061	0·0258854	3·8683894	19440
19520	1·123	0·0502179	2·8988860	1·061	0·0256522	3·8762004	19520
19600	1·122	0·0499518	2·9006240	1·060	0·0254217	3·8840614	19600
19680	1·121	0·0496874	2·9073620	1·060	0·0251939	3·8919224	19680
19760	1·121	0·0494261	2·9141000	1·059	0·0249685	3·8997834	19760
19840	1·120	0·0491676	2·9208380	1·059	0·0247458	3·4076444	19840
19920	1·119	0·0489116	2·9275760	1·058	0·0245256	3·4155054	19920
20000	1·119	0·0486584	2·9343140	1·058	0·0243080	3·4233664	20000
20080	1·118	0·0484077	2·9410520	1·057	0·0240928	3·4312274	20080
20160	1·117	0·0481596	2·9477900	1·057	0·0238801	3·4390884	20160
20240	1·117	0·0479140	2·9545280	1·056	0·0236698	3·4469494	20240
20320	1·116	0·0476710	2·9612660	1·056	0·0234620	3·4548104	20320
20400	1·115	0·0474305	2·9680040	1·055	0·0232566	3·4626714	20400
20480	1·115	0·0471925	2·9747420	1·055	0·0230536	3·4705324	20480
20560	1·114	0·0469569	2·9814800	1·054	0·0228529	3·4783934	20560
20640	1·114	0·0467287	2·9882180	1·054	0·0226545	3·4862544	20640
20720	1·113	0·0464980	2·9949560	1·053	0·0224585	3·4941154	20720
20800	1·112	0·0462646	3·0016940	1·053	0·0222647	3·5019764	20800
20880	1·112	0·0460386	3·0084320	1·052	0·0220731	3·5098374	20880
20960	1·111	0·0458149	3·0151700	1·052	0·0218838	3·5176984	20960
21040	1·111	0·0455935	3·0219080	1·051	0·0216968	3·5255594	21040
21120	1·110	0·0453744	3·0286460	1·051	0·0215119	3·5334204	21120
$n = \cdot 050$							
Sine of Inclination (1 over)	N	log. N	D	Sine of Inclination (1 over)	N	log. N	D
18880	·9526	1·9789140	4·7883084	20000	·9478	1·9767096	4·8905234
18960	·9522	1·9787405	4·7445384	20080	·9475	1·9765698	4·9017534
19000	·9520	1·9786545	4·7501484	20160	·9472	1·9764328	4·9129834
19040	·9519	1·9785694	4·7557684	20240	·9469	1·9762970	4·9242134
19120	·9515	1·9784010	4·7669984	20320	·9466	1·9761639	4·9354434
19200	·9511	1·9782351	4·7782284	20400	·9463	1·9760330	4·9466734
19280	·9508	1·9780717	4·7894584	20480	·9460	1·9759042	4·9579034
19360	·9504	1·9779107	4·8006884	20560	·9458	1·9757775	4·9691334
19440	·9501	1·9777523	4·8119184	20640	·9455	1·9756529	4·9803634
19520	·9497	1·9775962	4·8231484	20720	·9452	1·9755304	4·9915934
19600	·9494	1·9774426	4·8343784	20800	·9450	1·9754099	5·0028234
19680	·9491	1·9772914	4·8456084	20880	·9447	1·9752914	5·0140534
19760	·9487	1·9771424	4·8568384	20960	·9444	1·9751750	5·0252834
19840	·9484	1·9769959	4·8680684	21040	·9442	1·9750606	5·0365134
19920	·9481	1·9768516	4·8792984	21120	·9439	1·9749481	5·0477434

TABLE II.—GENERAL HYDRAULIC TABLE FOR CHANNELS WITH SEGMENTAL CROSS SECTIONS WHERE (d) IS THE DIAMETER IN FEET.

Depth on invert + by Diameter.	(R) Hydraulic Mean Depth = (d) \times by	log. (R.)	(A) Area of Section = (d) ² \times by	log. (A.)
.001	.0006635	4.8218477	.000042	5.6232493
.002	.0013300	3.1238579	.000119	4.0755470
.003	.0015872	3.2006354	.000219	4.3404411
.004	.0026624	3.4252819	.000337	4.5276299
.005	.0033291	3.5223288	.000471	4.6730209
.006	.0039916	3.6011499	.000619	4.7916906
.007	.0046007	3.6628280	.000779	4.8915375
.008	.0053147	3.7254827	.000952	4.9786369
.009	.0059730	3.7761925	.001135	5.0549959
.010	.0066339	3.8217690	.001329	5.1235250
.011	.0072948	3.8630168	.001533	5.1855422
.02	.0132103	2.1209131	.003749	5.5739154
.03	.0197204	2.2949176	.006866	5.8367038
.04	.0261072	2.4167618	.010538	5.0227582
.05	.0325183	2.5121286	.014681	5.1667556
.06	.0388718	2.5896355	.019239	5.2841825
.07	.0451293	2.6544591	.024168	5.3832407
.08	.0513242	2.7103223	.029435	5.4688640
.09	.0574545	2.7593247	.035012	5.5442169
.10	.0635197	2.8029086	.040875	5.6114578
.11	.0695218	2.8421214	.047006	5.6721533
.12	.0754576	2.8777034	.053385	5.7274192
.13	.0813297	2.9102493	.059999	5.7781440
.14	.0871363	2.9401992	.066833	5.8249910
.15	.0928780	2.9679130	.073875	5.8684975
.16	.0985525	2.9936677	.081112	5.9090851
.17	.1041620	3.0177126	.088536	5.9471199
.18	.1097050	3.0402294	.096135	5.9828815
.19	.1151810	3.0613835	.103900	6.0166155
.20	.1205910	3.0813174	.111824	6.0485350
.21	.1259340	3.1001445	.119898	6.0788121
.22	.1312090	3.1179645	.128114	6.1075966
.23	.1364160	3.1348656	.136465	6.1350213
.24	.1415550	3.1509269	.144945	6.1612033
.25	.1466250	3.1662098	.153546	6.1862385
.26	.1516270	3.1807786	.162263	6.2102195
.27	.1565610	3.1946836	.171090	6.2332246
.28	.1614240	3.2079691	.180020	6.2553208
.29	.1662170	3.2206779	.189048	6.2765721
.30	.1709408	3.2328459	.198168	6.2970335
.31	.1755999	3.2445125	.207376	6.3167585
.32	.1801755	3.2556958	.216666	6.3357908
.33	.1846863	3.2664350	.226034	6.3541738
.34	.1891243	3.2767476	.235473	6.3719411
.35	.1934913	3.2866615	.244980	6.3891306
.36	.1977867	3.2961971	.254551	6.4057748
.37	.2020067	3.3053659	.264179	6.4218983
.38	.2061539	3.3141915	.273861	6.4375302
.39	.2102275	3.3226895	.283593	6.4526955
.40	.2142265	3.3307553	.293370	6.4671105
.41	.2181500	3.3387553	.303187	6.4817105
.42	.2219991	3.3463513	.313042	6.4956026
.43	.2257711	3.3536683	.322928	6.5091057
.44	.2294670	3.3607202	.332843	6.5222394
.45	.2330861	3.3675165	.342783	6.5350193
.46	.2365823	3.3739824	.352742	6.5474572
.47	.2401077	3.3804062	.362717	6.5595679
.48	.2434724	3.3864499	.372704	6.5713640
.49	.2467765	3.3923040	.382700	6.5828585
.50	.2500000	3.3979400	.392699	6.5940599

TABLE II.—*continued.*

Depth on Invert + by Diameter.	(R) Hydraulic Mean Depth = $(d) \times \text{by}$	log. (R.)	(A) Area of Section = $(d)^2 \times \text{by}$	log. (A.)
.51	.2531476	I.4083739	.402698	I.6049805
.52	.2562031	I.4085844	.412694	I.6156281
.53	.2591626	I.4135724	.422681	I.6260127
.54	.2621200	I.4185003	.432656	I.6361427
.55	.2648858	I.4230588	.442615	I.6460261
.56	.2676119	I.4275055	.452555	I.6556714
.57	.2702514	I.4317680	.462470	I.6650836
.58	.2728035	I.4358501	.472356	I.6742694
.59	.2753687	I.4397569	.482211	I.6832371
.60	.2776532	I.4435128	.492028	I.6919898
.61	.2799297	I.4470491	.501805	I.7005351
.62	.2822242	I.4504405	.511537	I.7088771
.63	.2842258	I.4536636	.521119	I.7170202
.64	.2862334	I.4567203	.530847	I.7249693
.65	.2881476	I.4596152	.540418	I.7327298
.66	.2899644	I.4623447	.549925	I.7403035
.67	.2916826	I.4649106	.559364	I.7476945
.68	.2932954	I.4673054	.568732	I.7549076
.69	.2948185	I.4695548	.578022	I.7619444
.70	.2962346	I.4716358	.587230	I.7688082
.71	.2975439	I.4735511	.596350	I.7755012
.72	.2987462	I.4753025	.605378	I.7820267
.73	.2998390	I.4768883	.614308	I.7883862
.74	.3008204	I.4783074	.623135	I.7945822
.75	.3016891	I.4795568	.631852	I.8006154
.76	.3024360	I.4806335	.640453	I.8064872
.77	.3030650	I.4815358	.648933	I.8121999
.78	.3035695	I.4822583	.657284	I.8177530
.79	.3039472	I.4827982	.665500	I.8231481
.80	.3041912	I.4831466	.673574	I.8283827
.81	.3043027	I.4833059	.681498	I.8334646
.82	.3042710	I.4832605	.689263	I.8383850
.83	.3040920	I.4830050	.696862	I.8431467
.84	.3037602	I.4825309	.704286	I.8477491
.85	.3032668	I.4818249	.711523	I.8521889
.86	.3026047	I.4808758	.718565	I.8564661
.87	.3017633	I.4796665	.725399	I.8605770
.88	.3007313	I.4781787	.732013	I.8645188
.89	.2994940	I.4763891	.738392	I.8682870
.90	.2980366	I.4742697	.744523	I.8718782
.91	.2963368	I.4717856	.750386	I.8752848
.92	.2943689	I.4688920	.755963	I.8785005
.93	.2922092	I.4655305	.761230	I.8815159
.94	.2894816	I.4616210	.766159	I.8843189
.95	.2864985	I.4571226	.770717	I.8868949
.96	.2829115	I.4516507	.774860	I.8892232
.97	.2787014	I.4451393	.778332	I.8912765
.98	.2735143	I.4369801	.781649	I.8930116
.989	.2673989	I.4271597	.783865	I.8942413
.990	.2665487	I.4257769	.784069	I.8943543
.991	.2657104	I.4244086	.784263	I.8944618
.992	.2647947	I.4229094	.784446	I.8945631
.993	.2639795	I.4215703	.784619	I.8946588
.994	.2627739	I.4195823	.784779	I.8947474
.995	.2616330	I.4176926	.784927	I.8948293
.996	.2603835	I.4156135	.785061	I.8949032
.997	.2589645	I.4132404	.785179	I.8949687
.998	.2572897	I.4104224	.785279	I.8950240
.999	.2502494	I.3983730	.785356	I.8950665
1.000	.2500000	I.3979400	.785398	I.8950899

TABLE III.—PIPE THREE INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·003	·00016	4·2197877	·01287	·000002	8·4191293
·002	·006	·00033	4·5217979	·01823	·000007	8·8714270
·003	·009	·00059	4·5985754	·01991	·000013	5·1363211
·004	·012	·00066	4·8232219	·02579	·000021	5·3235099
·005	·015	·00083	4·9202688	·02884	·000029	5·4689009
·006	·018	·00099	4·9990899	·03158	·000038	5·5875706
·007	·021	·00115	3·0607680	·03391	·000048	5·6874175
·008	·024	·00132	3·1234227	·03645	·000059	5·7745169
·009	·027	·00149	3·1741325	·03864	·000071	5·8508759
·010	·030	·00165	3·2197090	·04072	·000083	5·9194050
·011	·033	·00182	3·2609568	·04270	·000096	5·9814222
·02	·06	·00330	3·5188531	·05746	·000234	4·3697954
·03	·09	·00493	3·6928576	·07021	·000429	4·6325838
·04	·12	·00652	3·8147013	·08078	·000659	4·8186382
·05	·15	·00812	3·9100686	·09016	·000917	4·9626356
·06	·18	·00971	3·9875755	·09857	·001202	3·0800625
·07	·21	·01128	2·0523991	·10621	·001510	3·1791207
·08	·24	·01283	2·1082623	·10327	·001839	3·2647440
·09	·27	·01436	2·1572647	·11984	·002188	3·3400969
·10	·30	·01587	2·2008486	·12601	·002554	3·4073378
·11	·33	·01738	2·2400614	·13183	·002937	3·4680333
·12	·36	·01886	2·2756434	·13784	·003336	3·5232992
·13	·39	·02033	2·3081893	·14259	·003749	3·5740240
·14	·42	·02178	2·3381392	·14762	·004177	3·6208710
·15	·45	·02321	2·3658530	·15237	·004617	3·6643775
·16	·48	·02463	2·3916077	·15696	·005069	3·7049651
·17	·51	·02604	2·4156526	·16137	·005533	3·7429999
·18	·54	·02742	2·4381694	·16560	·006008	3·7787615
·19	·57	·02879	2·4593235	·16969	·006494	3·8124955
·20	·60	·03014	2·4792574	·17363	·006989	3·8444150
·21	·63	·03148	2·4980845	·17743	·007493	3·8746921
·22	·66	·03280	2·5159045	·18111	·008007	3·9034766
·23	·69	·03410	2·5328056	·18467	·008529	3·9309013
·24	·72	·03538	2·5488669	·18811	·009059	3·9570833
·25	·75	·03665	2·5641498	·19156	·009596	3·9821185
·26	·78	·03790	2·5787186	·19469	·010141	2·0060995
·27	·81	·03914	2·5926236	·19783	·010693	2·0291046
·28	·84	·04035	2·6059091	·20088	·011251	2·0512008
·29	·87	·04155	2·6186179	·20384	·011815	2·0724521
·30	·90	·04273	2·6307859	·20672	·012385	2·0929135
·31	·93	·04399	2·6424525	·20976	·012961	2·1126385
·32	·96	·04504	2·6536358	·21223	·013541	2·1316708
·33	·99	·04617	2·6643750	·21487	·014127	2·1500538
·34	1·02	·04728	2·6746876	·21744	·014717	2·1678211
·35	1·05	·04837	2·6846015	·21993	·015311	2·1850106
·36	1·08	·04944	2·6941371	·22236	·015909	2·2016548
·37	1·11	·05050	2·7033059	·22472	·016511	2·2177783
·38	1·14	·05153	2·7121315	·22702	·017116	2·2334102
·39	1·17	·05255	2·7206295	·22925	·017724	2·2485755
·40	1·20	·05355	2·7366953	·23062	·018335	2·2775905
·41	1·23	·05453	2·7366953	·23353	·018949	2·2775905
·42	1·26	·05549	2·7442913	·23558	·019565	2·2914826
·43	1·29	·05644	2·7516083	·23757	·020183	2·3049857
·44	1·32	·05736	2·7586602	·23951	·020802	2·3181194
·45	1·35	·05827	2·7654565	·24139	·021423	2·3308993
·46	1·38	·05914	2·7719224	·24319	·022046	2·3433372
·47	1·41	·06002	2·7783462	·24500	·022669	2·3554479
·48	1·44	·06086	2·7843899	·24671	·023294	2·3672440
·49	1·47	·06169	2·7902440	·24838	·023919	2·3787385
·50	1·50	·06250	2·7958800	·25000	·024543	2·3899399

TABLE III.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	1.53	.06328	2.8013139	.25156	.025168	2.4008605
.52	1.56	.06405	2.8065244	.25308	.025793	2.4115081
.53	1.59	.06479	2.8115124	.25454	.026417	2.4218927
.54	1.62	.06553	2.8164403	.25598	.027041	2.4320227
.55	1.65	.06622	2.8209988	.25733	.027663	2.4419061
.56	1.68	.06690	2.8254455	.25865	.028284	2.4515514
.57	1.71	.06756	2.8297080	.25992	.028904	2.4609636
.58	1.74	.06820	2.8337901	.26106	.029522	2.4701494
.59	1.77	.06884	2.8376969	.26237	.030138	2.4791171
.60	1.80	.06941	2.8414528	.26346	.030752	2.4878698
.61	1.83	.06998	2.8449891	.26454	.031363	2.4964161
.62	1.86	.07055	2.8483805	.26562	.031971	2.5047571
.63	1.89	.07105	2.8516036	.26666	.032601	2.5129002
.64	1.92	.07155	2.8546603	.26750	.033178	2.5208493
.65	1.95	.07203	2.8575552	.26839	.033776	2.5286098
.66	1.98	.07249	2.8602847	.26924	.034370	2.5361835
.67	2.01	.07292	2.8628506	.27003	.034960	2.5435745
.68	2.04	.07332	2.8652454	.27078	.035546	2.5507876
.69	2.07	.07370	2.8674948	.27148	.036126	2.5578244
.70	2.10	.07405	2.8695758	.27213	.036702	2.5646882
.71	2.13	.07438	2.8714911	.27273	.037272	2.5713812
.72	2.16	.07468	2.8732425	.27328	.037836	2.5779067
.73	2.19	.07495	2.8748283	.27378	.038394	2.5842662
.74	2.22	.07520	2.8762474	.27423	.038946	2.5904622
.75	2.25	.07542	2.8774968	.27463	.039491	2.5964954
.76	2.28	.07560	2.8785735	.27497	.040028	2.6023672
.77	2.31	.07576	2.8794758	.27525	.040558	2.6080799
.78	2.34	.07589	2.8801983	.27548	.041080	2.6136330
.79	2.37	.07598	2.8807382	.27565	.041594	2.6190281
.80	2.40	.07604	2.8810866	.27576	.042198	2.6242627
.81	2.43	.07607	2.8812459	.27581	.042594	2.6293446
.82	2.46	.07606	2.8812005	.27580	.043079	2.6342650
.83	2.49	.07602	2.8809450	.27572	.043551	2.6390267
.84	2.52	.07594	2.8804709	.27557	.044017	2.6436291
.85	2.55	.07581	2.8797649	.27534	.044470	2.6480689
.86	2.58	.07565	2.8788158	.27504	.044910	2.6523461
.87	2.61	.07544	2.8776065	.27466	.045337	2.6564570
.88	2.64	.07518	2.8761187	.27419	.045751	2.6603988
.89	2.67	.07487	2.8743291	.27363	.046149	2.6641670
.90	2.70	.07450	2.8722097	.27296	.046533	2.6677582
.91	2.73	.07408	2.8697256	.27218	.046899	2.6711648
.92	2.76	.07359	2.8668320	.27128	.047248	2.6743805
.93	2.79	.07302	2.8634705	.27023	.047577	2.6773959
.94	2.82	.07237	2.8595610	.26901	.047885	2.6801989
.95	2.85	.07162	2.8550626	.26762	.048169	2.6827749
.96	2.88	.07072	2.8495907	.26594	.048429	2.6851032
.97	2.91	.06967	2.8430793	.26396	.048658	2.6871565
.98	2.94	.06837	2.8349201	.26149	.048853	2.6888918
.989	2.967	.06684	2.8250997	.25855	.048991	2.6901213
.990	2.970	.06663	2.8237169	.25814	.049004	2.6902343
.991	2.973	.06642	2.8223486	.25773	.049016	2.6903418
.992	2.976	.06619	2.8208494	.25729	.049028	2.6904451
.993	2.979	.06599	2.8195103	.25689	.049039	2.6905388
.994	2.982	.06569	2.8175223	.25630	.049049	2.6906274
.995	2.985	.06540	2.8156326	.25575	.049058	2.6907093
.996	2.988	.06509	2.8135535	.25513	.049066	2.6907832
.997	2.991	.06474	2.8111804	.25444	.049073	2.6908487
.998	2.994	.06432	2.8083624	.25303	.049079	2.6909040
.999	2.997	.06256	2.7963130	.25070	.049084	2.6909465
1.000	3.000	.06250	2.7958800	.25000	.049087	2.6909699

TABLE IV.—PIPE FOUR INCHES IN DIAMETER.

Depth on In- vert. + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·004	·00022	4·3447264	·01487	·000004	8·6690068
·002	·008	·00044	4·6467366	·02105	·000013	5·1213045
·003	·012	·00052	4·7235141	·02300	·000024	5·3861986
·004	·016	·00088	4·9481606	·02979	·000037	5·5733874
·005	·020	·00110	5·0452075	·03331	·000052	5·7187784
·006	·024	·00133	5·1240286	·03647	·000068	5·8374481
·007	·028	·00153	5·1857067	·03916	·000086	5·9372950
·008	·032	·00177	5·2483614	·04208	·000106	6·0243944
·009	·036	·00199	5·2990712	·04462	·000126	6·1007534
·010	·040	·00221	5·3446477	·04702	·000147	6·1692825
·011	·044	·00243	5·3858955	·04931	·000170	6·2312997
·02	·08	·00440	5·6437918	·06635	·000416	6·6196729
·03	·12	·00657	5·8177963	·08107	·000763	6·8824613
·04	·16	·00870	5·9396400	·09320	·001171	7·0685157
·05	·20	·01083	6·0350073	·10411	·001632	7·2125131
·06	·24	·01295	6·1125142	·11383	·002137	7·3299400
·07	·28	·01504	6·1773378	·12265	·002685	7·4289982
·08	·32	·01710	6·2332010	·13079	·003270	7·5146215
·09	·36	·01915	6·2822034	·13836	·003890	7·5899744
·10	·40	·02117	6·3257873	·14551	·004542	7·6572153
·11	·44	·02317	6·3650001	·15222	·005223	7·7179108
·12	·48	·02515	6·4005821	·15859	·005932	7·7731767
·13	·52	·02710	6·4331280	·16465	·006666	7·8239015
·14	·56	·02886	6·4630779	·17042	·007426	7·8707485
·15	·60	·03095	6·4907917	·17595	·008208	7·9142550
·16	·64	·03285	6·5165464	·18124	·009012	7·9548426
·17	·68	·03472	6·5405913	·18633	·009837	7·9928774
·18	·72	·03658	6·5631081	·19122	·010682	8·0286390
·19	·76	·03839	6·5842622	·19594	·011544	8·0623730
·20	·80	·04019	6·6041961	·20049	·012425	8·0942925
·21	·84	·04197	6·6230232	·20488	·013322	8·1245696
·22	·88	·04323	6·6408432	·20913	·014235	8·1533541
·23	·92	·04547	6·6577443	·21324	·015152	8·1807788
·24	·96	·04718	6·6738056	·21722	·016105	8·2069608
·25	1·00	·04887	6·6890885	·22107	·017061	8·2319960
·26	1·04	·05054	6·7036573	·22532	·018029	8·2559770
·27	1·08	·05099	6·7175623	·22582	·019010	8·2789821
·28	1·12	·05380	6·7308478	·23196	·020002	8·3010783
·29	1·16	·05540	6·7435566	·23538	·021005	8·3223296
·30	1·20	·05698	6·7567246	·23870	·022018	8·3427910
·31	1·24	·05853	6·7673912	·24193	·023042	8·3625160
·32	1·28	·06005	6·7785745	·24506	·024074	8·3815493
·33	1·32	·05156	6·7893137	·24811	·025115	8·3999313
·34	1·36	·06304	6·7996263	·25108	·026164	8·4176986
·35	1·40	·06448	6·8095402	·25396	·027220	8·4348881
·36	1·44	·06592	6·8190758	·25676	·028283	8·4515323
·37	1·48	·06733	6·8282446	·25948	·029353	8·4676558
·38	1·52	·06871	6·8370702	·26214	·030429	8·4832877
·39	1·56	·07008	6·8455682	·26471	·031510	8·4984530
·40	1·60	·07141	6·8616340	·26722	·032596	8·5274680
·41	1·64	·07271	6·8616340	·26966	·033687	8·5274680
·42	1·68	·07399	6·8692300	·27202	·034782	8·5413601
·43	1·72	·07525	6·8765470	·27433	·035881	8·5548632
·44	1·76	·07648	6·8835989	·27656	·036982	8·5679969
·45	1·80	·07769	6·8903952	·27873	·038087	8·5807768
·46	1·84	·07886	6·8968611	·28082	·039194	8·5932147
·47	1·88	·08003	6·9032849	·28290	·040302	8·6053254
·48	1·92	·08115	6·9093286	·28488	·041411	8·6171215
·49	1·96	·08225	6·9151827	·28680	·042522	8·6286160
·50	2·00	·08333	6·9208187	·28867	·043633	8·6398174

GANGUILLET AND KUTTER'S FORMULA.

TABLE IV.—continued.

Depth on In- vert. + by Diameter.	Depth on In- vert in Ins.	Hydran- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
51	2.04	08438	2.9262526	29048	041744	2.6507370
52	2.08	08540	2.9314631	29223	045855	2.6613856
53	2.12	08638	2.9364511	29391	046964	2.6717702
54	2.16	08737	2.9413790	29559	048073	2.6819002
55	2.20	08829	2.9459375	29714	049179	2.6917885
56	2.24	08920	2.9503842	29867	050284	2.7014289
57	2.28	09218	2.9546467	30014	051385	2.7108411
58	2.32	09093	2.9587288	30155	052484	2.7200269
59	2.36	09175	2.9626356	30291	053579	2.7289946
60	2.40	09693	2.9663915	31134	054669	2.7377473
61	2.44	09330	2.9699278	30546	055756	2.7462926
62	2.48	09404	2.9733192	30666	056837	2.7546346
63	2.52	09474	2.9765423	30780	057913	2.7627777
64	2.56	09541	2.9795990	30889	058983	2.7707268
65	2.60	09604	2.9824939	30991	060048	2.7784873
66	2.64	09665	2.9852234	31089	061214	2.7860610
67	2.68	09722	2.9877893	31181	062274	2.7934520
68	2.72	09776	2.9901841	31267	063192	2.8006651
69	2.76	09827	2.9924335	31348	064222	2.8077019
70	2.80	09874	2.9945145	31423	065248	2.8145657
71	2.84	09918	2.9964298	31493	066261	2.8212587
72	2.88	09958	2.9981812	31556	067264	2.8277842
73	2.92	09971	2.9997670	31577	068256	2.8341437
74	2.96	10027	1.0011861	31662	069237	2.8403397
75	3.00	10056	1.0024355	31711	070206	2.8463729
76	3.04	10081	1.0035122	31750	071161	2.8522447
77	3.08	10102	1.0044145	31784	072103	2.8579574
78	3.12	10119	1.0051370	31810	073031	2.8635105
79	3.16	10131	1.0056769	31830	073944	2.8689056
80	3.20	10139	1.0060253	31842	074841	2.8741402
81	3.24	10143	1.0061846	31848	075722	2.8792221
82	3.28	10142	1.0061392	31847	076584	2.8841425
83	3.32	10136	1.0058837	31837	077429	2.8889042
84	3.36	10125	1.0054096	31821	078254	2.8935066
85	3.40	10132	1.0047036	31794	079058	2.8979464
86	3.44	10084	1.0037545	31756	079840	2.9022236
87	3.48	10081	1.0025452	31715	080599	2.9063345
88	3.52	10024	1.0010574	31661	081333	2.9102763
89	3.56	09983	2.9992678	31596	082043	2.9140445
90	3.60	09934	2.9971484	31519	082724	2.9176357
91	3.64	09877	2.9946643	31429	083378	2.9210423
92	3.68	09812	2.9917707	31324	083995	2.9242580
93	3.72	09736	2.9884092	31203	084581	2.9272734
94	3.76	09649	2.9844997	31063	085128	2.9300764
95	3.80	09549	2.9800013	30903	085635	2.9326524
96	3.84	09430	2.9745294	30708	086095	2.9349807
97	3.88	09290	2.9680180	30479	086503	2.9370340
98	3.92	09117	2.9598588	30194	086849	2.9387693
989	3.956	08913	2.9500384	29855	087096	2.9399988
990	3.960	08884	2.9486556	29807	087118	2.9401118
991	3.964	08857	2.9472873	29760	087140	2.9402193
992	3.968	08826	2.9457881	29709	087161	2.9403206
993	3.972	08799	2.9444490	29663	087179	2.9404163
994	3.976	08762	2.9424610	29595	087197	2.9404949
995	3.980	08721	2.9405713	29531	087214	2.9405868
996	3.984	08679	2.9384922	29460	087229	2.9406607
997	3.988	08632	2.9361191	29380	087242	2.9407262
998	3.992	08576	2.9333011	29285	087253	2.9407815
999	3.996	08541	2.9212517	28881	087262	2.9408240
1.000	4.000	08333	2.9208187	28867	087266	2.9408474



TABLE V.—PIPE FIVE INCHES IN DIAMETER.

Depth on In- vert. + by Diameter.	Depth on In- vert in Ina.	Hydrau- lic Mean Depth, R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·005	·00027	4·4416365	·01662	·0000072	6·8628268
·002	·010	·00055	4·7436467	·02354	·0000206	5·3151245
·003	·015	·00066	4·8204242	·02571	·0000380	5·5800216
·004	·020	·00110	3·0450707	·03330	·0000585	5·7672074
·005	·025	·00138	3·1421176	·03724	·0000817	5·9125984
·006	·030	·00166	3·2209387	·04078	·0001074	4·0812681
·007	·035	·00191	3·2826168	·04378	·0001352	4·1311150
·008	·040	·00221	3·3452715	·04705	·0001652	4·2182144
·009	·045	·00248	3·3959813	·04988	·0001970	4·2945734
·010	·050	·00276	3·4415578	·05257	·0002307	4·3631025
·011	·055	·00303	3·4828056	·05513	·0002661	4·4251197
·02	·10	·00550	3·7407018	·07419	·0006508	4·8134929
·03	·15	·00821	3·9147064	·09064	·0011920	3·0762813
·04	·20	·01087	2·0365501	·10429	·0018295	3·2623357
·05	·25	·01354	2·1319174	·11640	·0025487	3·4063331
·06	·30	·01619	2·2094243	·12726	·0033401	3·5237600
·07	·35	·01880	2·2742479	·13712	·0041958	3·6228182
·08	·40	·02133	2·3301111	·14623	·0051102	3·7084415
·09	·45	·02393	2·3791135	·15472	·0060784	3·7837944
·10	·50	·02646	2·4226974	·16268	·0070963	3·8510353
·11	·55	·02896	2·4619102	·17059	·0081607	3·9117308
·12	·60	·03144	2·4974922	·17731	·0092682	3·9669967
·13	·65	·03388	2·5300381	·18408	·010416	2·0177215
·14	·70	·03630	2·5599880	·19054	·011602	2·0645685
·15	·75	·03869	2·5877018	·19672	·012825	2·1080750
·16	·80	·04106	2·6134565	·20264	·014081	2·1486626
·17	·85	·04340	2·6375014	·20832	·015367	2·1866974
·18	·90	·04571	2·6600182	·21380	·016690	2·2224590
·19	·95	·04799	2·6811723	·21907	·018038	2·2561930
·20	1·00	·05024	2·7011062	·22415	·019413	2·2881125
·21	1·05	·05247	2·7199333	·22906	·020815	2·3183896
·22	1·10	·05467	2·7377533	·23381	·022242	2·3471741
·23	1·15	·05684	2·7546544	·23841	·023691	2·3745988
·24	1·20	·05898	2·7707157	·24286	·025164	2·4007808
·25	1·25	·06009	2·7859986	·24717	·026657	2·4258160
·26	1·30	·06317	2·8005674	·25135	·028170	2·4497970
·27	1·35	·06523	2·8144724	·25540	·029703	2·4728021
·28	1·40	·06726	2·8277579	·25934	·031253	2·4948983
·29	1·45	·06925	2·8404667	·26316	·032820	2·5161496
·30	1·50	·07122	2·8526347	·26688	·034404	2·5366110
·31	1·55	·07316	2·8643013	·27048	·036002	2·5563360
·32	1·60	·07507	2·8754846	·27399	·037615	2·5753683
·33	1·65	·07695	2·8862238	·27740	·039242	2·5937513
·34	1·70	·07880	2·8965364	·28071	·040880	2·6115186
·35	1·75	·08062	2·9064503	·28393	·042531	2·6287081
·36	1·80	·08241	2·9159859	·28707	·044192	2·6453523
·37	1·85	·08416	2·9251547	·29011	·045864	2·6614758
·38	1·90	·08589	2·9339803	·29308	·047545	2·6771077
·39	1·95	·08759	2·9424783	·29596	·049234	2·6922730
·40	2·00	·08926	2·9506718	·29876	·050932	2·7069932
·41	2·05	·09089	2·9585441	·30148	·052637	2·7212980
·42	2·10	·09249	2·9661401	·30413	·054347	2·7351801
·43	2·15	·09307	2·9734571	·30671	·056063	2·7486832
·44	2·20	·09561	2·9805090	·30921	·057785	2·7618169
·45	2·25	·09711	2·9873053	·31164	·059510	2·7745968
·46	2·30	·09857	2·9937712	·31396	·061239	2·7870847
·47	2·35	·10004	2·0001950	·31629	·062971	2·7991454
·48	2·40	·10144	2·0062387	·31777	·064706	2·8109415
·49	2·45	·10282	2·0120928	·31066	·066440	2·8224360
·50	2·50	·10416	2·0177288	·32274	·068176	2·8336373

TABLE V.—*continued.*

Depth on In- vert. + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	2.55	·10547	I·0231627	·32477	·069913	2·8445580
.52	2.60	·10675	I·0283732	·32672	·071648	2·8552056
.53	2.65	·10798	I·0333612	·32860	·073382	2·8655902
.54	2.70	·10921	I·0382891	·33047	·075113	2·8757202
.55	2.75	·11036	I·0428476	·33221	·076842	2·8856036
.56	2.80	·11150	I·0472943	·33392	·078568	2·8952489
.57	2.85	·11260	I·0515568	·33556	·080289	2·9046609
.58	2.90	·11366	I·0556389	·33714	·082006	2·9138469
.59	2.95	·11469	I·0595397	·33866	·083717	2·9228146
.60	3.00	·11569	I·0633006	·34013	·085421	2·9315673
.61	3.05	·11663	I·0668379	·34152	·087120	2·9401126
.62	3.10	·11755	I·0702293	·34285	·088808	2·9484546
.63	3.15	·11842	I·0734524	·34413	·090489	2·9565977
.64	3.20	·11926	I·0765091	·34534	·092160	2·9645468
.65	3.25	·12006	I·0794040	·34649	·093822	2·9723073
.66	3.30	·12081	I·0821335	·34758	·095473	2·9798810
.67	3.35	·12153	I·0846994	·34861	·097111	2·9872720
.68	3.40	·12220	I·0870942	·34958	·098738	2·9944851
.69	3.45	·12284	I·0893436	·35048	·10035	I·0015219
.70	3.50	·12343	I·0914246	·35132	·10194	I·0083857
.71	3.55	·12397	I·0933399	·35210	·10353	I·0150787
.72	3.60	·12447	I·0950913	·35281	·10510	I·0216042
.73	3.65	·12493	I·0966771	·35345	·10665	I·0279637
.74	3.70	·12534	I·0980962	·35403	·10818	I·0341597
.75	3.75	·12570	I·0993456	·35454	·10969	I·0401929
.76	3.80	·12601	I·1004223	·35498	·11118	I·0460647
.77	3.85	·12627	I·1013246	·35535	·11266	I·0517774
.78	3.90	·12648	I·1020471	·35565	·11411	I·0573305
.79	3.95	·12664	I·1025870	·35587	·11553	I·0627256
.80	4.00	·12674	I·1029354	·35601	·11693	I·0679602
.81	4.05	·12682	I·1031947	·35607	·11831	I·0730421
.82	4.10	·12677	I·1030493	·35606	·11966	I·0779625
.83	4.15	·12670	I·1027938	·35595	·12098	I·0827242
.84	4.20	·12656	I·1023197	·35576	·12227	I·0873266
.85	4.25	·12636	I·1016137	·35547	·12352	I·0917664
.86	4.30	·12608	I·1006646	·35508	·12475	I·0960436
.87	4.35	·12573	I·0994553	·35459	·12593	I·1001545
.88	4.40	·12530	I·0979675	·35398	·12708	I·1040963
.89	4.45	·12507	I·0961779	·35325	·12819	I·1078645
.90	4.50	·12418	I·0940585	·35239	·12925	I·1114557
.91	4.55	·12347	I·0915744	·35138	·13027	I·1148623
.92	4.60	·12265	I·0886808	·35021	·13124	I·1180780
.93	4.65	·12171	I·0853293	·34887	·13215	I·1210944
.94	4.70	·12061	I·0814098	·34730	·13301	I·1238964
.95	4.75	·11937	I·0769114	·34550	·13380	I·1264724
.96	4.80	·11787	I·0714395	·34333	·13452	I·1288007
.97	4.85	·11612	I·0649281	·34077	·13516	I·1308540
.98	4.90	·11391	I·0567689	·33758	·13570	I·1325893
.989	4.945	·11141	I·0469485	·33379	·13608	I·1338188
.990	4.950	·11107	I·0455657	·33325	·13612	I·1339318
.991	4.955	·11076	I·0443974	·33281	·13615	I·1340393
.992	4.960	·11033	I·0426982	·33216	·13618	I·1341406
.993	4.965	·10999	I·0413591	·33164	·13621	I·1342363
.994	4.970	·10948	I·0393711	·33089	·13624	I·1343249
.995	4.975	·10901	I·0374814	·33017	·13627	I·1344068
.996	4.980	·10849	I·0354023	·32938	·13629	I·1344807
.997	4.985	·10790	I·0330292	·32848	·13631	I·1345462
.998	4.990	·10720	I·0302112	·32742	·13633	I·1346015
.999	4.995	·10427	I·0181618	·32290	·13634	I·1346440
1.000	5.000	·10416	I·0177288	·32274	·13635	I·1346673

TABLE VI.—PIPE SIX INCHES IN DIAMETER.

Depth on In- vert. ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·006	·00033	4·5208177	·01821	·000010	5·0211893
·002	·012	·00066	4·8228279	·02578	·000029	5·4734870
·003	·018	·00079	4·8995054	·02816	·000054	5·7383811
·004	·024	·00133	3·1242519	·03648	·000084	5·9255699
·005	·030	·00166	3·2212988	·04079	·000118	4·0709609
·006	·036	·00199	3·3001199	·04467	·000154	4·1896306
·007	·042	·00230	3·3617980	·04796	·000194	4·2894775
·008	·048	·00265	3·4244527	·05154	·000238	4·3765769
·009	·054	·00298	3·4751625	·05464	·000284	4·4529359
·010	·060	·00331	3·5207390	·05769	·000332	4·5214650
·011	·066	·00365	3·5629868	·06046	·000383	4·5834822
·012	·12	·00675	3·8298830	·08240	·000937	4·9718554
·03	·18	·00986	3·9938876	·09816	·001716	5·2346438
·04	·24	·01305	2·1157313	·11425	·002634	5·4206982
·05	·30	·01625	2·2110986	·12751	·003670	5·5646956
·06	·36	·01943	2·2886055	·13941	·004809	5·6821225
·07	·42	·02205	2·3434291	·14849	·006042	5·7811807
·08	·48	·02566	2·4092923	·16019	·007359	5·8668040
·09	·54	·02872	2·4582947	·16949	·008753	5·9421569
·10	·60	·03175	2·5018786	·17821	·010219	6·0093978
·11	·66	·03476	2·5410914	·18644	·011751	6·0700933
·12	·72	·03772	2·5766734	·19423	·013346	6·1253592
·13	·78	·04066	2·6092193	·20165	·014999	6·1760840
·14	·84	·04356	2·6391692	·20872	·016708	6·2229310
·15	·90	·04643	2·6668830	·21549	·018469	6·2664375
·16	·96	·04927	2·6926377	·22198	·020278	6·3070251
·17	1·02	·05086	2·7066826	·22560	·022134	6·3450599
·18	1·08	·05485	2·7391994	·23420	·024034	6·3808215
·19	1·14	·05759	2·7603535	·23998	·025975	6·4145555
·20	1·20	·06029	2·7802874	·24555	·027956	6·4464750
·21	1·26	·06296	2·7991145	·25093	·029974	6·4767500
·22	1·32	·06560	2·8169345	·25613	·032028	6·5055366
·23	1·38	·06820	2·8338356	·26116	·034116	6·5329613
·24	1·44	·07077	2·8498969	·26604	·036236	6·5591433
·25	1·50	·07348	2·8661798	·27107	·038386	6·5841785
·26	1·56	·07581	2·8797486	·27534	·040566	6·6081595
·27	1·62	·07828	2·8936536	·27978	·042772	6·6311646
·28	1·68	·08071	2·9069391	·28409	·045005	6·6532608
·29	1·74	·08310	2·9196479	·28828	·047262	6·6745121
·30	1·80	·08547	2·9318159	·29235	·049542	6·6949735
·31	1·86	·08779	2·9434825	·29630	·051844	6·7146985
·32	1·92	·09008	2·9546658	·30014	·054166	6·7337308
·33	1·98	·09234	2·9654050	·30388	·056508	6·7521138
·34	2·04	·09456	2·9757176	·30750	·058868	6·7698811
·35	2·10	·09674	2·9856315	·31103	·061245	6·7870706
·36	2·16	·09889	2·9951671	·31447	·063638	6·8037148
·37	2·22	·10100	3·0043359	·31781	·066044	6·8198333
·38	2·28	·10307	3·0131615	·32101	·068465	6·8354702
·39	2·34	·10511	3·0216595	·32421	·070898	6·8506355
·40	2·40	·10711	3·0298530	·32728	·073342	6·8656505
·41	2·46	·10907	3·0377253	·33026	·075797	6·8796505
·42	2·52	·11099	3·0453213	·33316	·078260	6·8935426
·43	2·58	·11288	3·0526383	·33598	·080732	6·9070457
·44	2·64	·11473	3·0596902	·33872	·083211	6·9201794
·45	2·70	·11654	3·0664865	·34138	·085695	6·9329493
·46	2·76	·11829	3·0729524	·34393	·088185	6·9453972
·47	2·82	·12005	3·0793762	·34648	·090679	6·9575079
·48	2·88	·12173	3·0854199	·34890	·093176	6·9693040
·49	2·94	·12338	3·0912740	·35126	·095675	6·9807985
·50	3·00	·12500	3·0969100	·35355	·098174	6·9819999

TABLE VI.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydra- lic Mean Depth R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	3·06	·12657	I·1023439	·35577	·100674	I·0029205
·52	3·12	·12810	I·1075544	·35791	·103173	I·0135681
·53	3·18	·12958	I·1125424	·35997	·105670	I·0239527
·54	3·24	·13106	I·1174703	·36202	·108164	I·0340827
·55	3·30	·13244	I·1220288	·36392	·110654	I·0439661
·56	3·36	·13380	I·1264755	·36579	·113139	I·0536114
·57	3·42	·13512	I·1307380	·36759	·115617	I·0630236
·58	3·48	·13640	I·1348201	·36932	·118089	I·0722094
·59	3·54	·13763	I·1387209	·37098	·120553	I·0811771
·60	3·60	·13882	I·1424828	·37259	·123007	I·0899298
·61	3·66	·13996	I·1460191	·37411	·125451	I·0984751
·62	3·72	·14106	I·1494105	·37558	·127884	I·1068171
·63	3·78	·14211	I·1526536	·37697	·130304	I·1149602
·64	3·84	·14311	I·1556903	·37830	·132711	I·1229093
·65	3·90	·14407	I·1585852	·37957	·135104	I·1306698
·66	3·96	·14498	I·1613147	·38076	·137481	I·1382435
·67	4·02	·14584	I·1638806	·38189	·139841	I·1456345
·68	4·08	·14664	I·1662754	·38294	·142183	I·1528476
·69	4·14	·14740	I·1685248	·38393	·144505	I·1598844
·70	4·20	·14811	I·1706058	·38486	·146807	I·1667482
·71	4·26	·14877	I·1725211	·38571	·149087	I·1734412
·72	4·32	·14937	I·1742725	·38648	·151344	I·1799667
·73	4·38	·14991	I·1758583	·38719	·153577	I·1863262
·74	4·44	·15041	I·1772774	·38782	·155783	I·1925222
·75	4·50	·15084	I·1785268	·38838	·157963	I·1985554
·76	4·56	·15121	I·1796035	·38886	·160113	I·2044272
·77	4·62	·15153	I·1805058	·38927	·162233	I·2101399
·78	4·68	·15178	I·1812283	·38959	·164321	I·2156930
·79	4·74	·15197	I·1817682	·38983	·166375	I·2210881
·80	4·80	·15209	I·1821166	·38999	·168393	I·2263227
·81	4·86	·15215	I·1822759	·39006	·170374	I·2314046
·82	4·92	·15213	I·1822305	·39004	·172315	I·2363250
·83	4·98	·15204	I·1819750	·38983	·174215	I·2410867
·84	5·04	·15188	I·1815009	·38971	·176071	I·2456891
·85	5·10	·15163	I·1807949	·38940	·177880	I·2501289
·86	5·16	·15130	I·1798458	·38897	·179641	I·2544061
·87	5·22	·15088	I·1786365	·38843	·181349	I·2585170
·88	5·28	·15036	I·1771487	·38777	·183003	I·2624588
·89	5·34	·14974	I·1753591	·38697	·184598	I·2662270
·90	5·40	·14901	I·1732397	·38602	·186130	I·2698182
·91	5·46	·14816	I·1707556	·38492	·187596	I·2732248
·92	5·52	·14718	I·1678620	·38364	·188990	I·2764405
·93	5·58	·14604	I·1645005	·38216	·190307	I·2794559
·94	5·64	·14474	I·1605910	·38044	·191539	I·2822589
·95	5·70	·14324	I·1560926	·37848	·192679	I·2848349
·96	5·76	·14145	I·1506207	·37610	·193715	I·2871632
·97	5·82	·13935	I·1441093	·37329	·194633	I·2892165
·98	5·88	·13675	I·1359501	·36980	·195412	I·2909518
·989	5·934	·13369	I·1261297	·36564	·195966	I·2921813
·990	5·940	·13327	I·1247469	·36506	·196017	I·2922943
·991	5·946	·13285	I·1233786	·36449	·196065	I·2924018
·992	5·952	·13239	I·1218794	·36386	·196111	I·2925031
·993	5·958	·13199	I·1205403	·36330	·196154	I·2925988
·994	5·964	·13138	I·1185523	·36247	·196194	I·2926874
·995	5·970	·13081	I·1166626	·36168	·196231	I·2927693
·996	5·976	·13019	I·1145835	·36082	·196265	I·2928432
·997	5·982	·12948	I·1122104	·35983	·196294	I·2929087
·998	5·988	·12864	I·1093924	·35867	·196319	I·2929640
·999	5·994	·12512	I·0973430	·35372	·196339	I·2930065
I·000	6·000	·12500	I·0969100	·35355	·196349	I·2930299

TABLE VII.—PIPE SEVEN INCHES IN DIAMETER.

Depth on In- vert \div by Diameter.	Depth on In- vert in Ink.	Hydra- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·007	·00038	4·5877645	·00196	·000014	5·1550829
·002	·014	·00077	4·8897747	·02785	·000040	5·6073806
·003	·021	·00092	4·9665522	·03042	·000074	5·8722777
·004	·028	·00155	3·1911987	·03940	·000114	4·0594635
·005	·035	·00194	3·2882456	·04406	·000160	4·2048545
·006	·042	·00232	3·3670667	·04825	·000211	4·3235242
·007	·049	·00268	3·4287448	·05180	·000265	4·4233711
·008	·056	·00310	3·4913995	·05568	·000323	4·5104705
·009	·063	·00348	3·5421093	·05902	·000386	4·5868295
·010	·070	·00386	3·5876858	·06220	·000452	4·6553586
·011	·077	·00425	3·6289336	·06523	·000521	4·7173758
·02	·14	·00770	3·8868298	·08778	·001275	3·1057490
·03	·21	·01150	2·0608344	·10725	·002336	3·3685374
·04	·28	·01522	2·1826781	·12340	·003585	3·5545918
·05	·35	·01896	2·2780454	·13772	·004995	3·6985892
·06	·42	·02267	2·3555523	·15058	·006546	3·8160161
·07	·49	·02632	2·4203759	·16225	·008223	3·9150743
·08	·56	·02993	2·4762391	·17302	·010016	2·0006976
·09	·63	·03351	2·5252415	·18307	·011913	2·0760505
·10	·70	·03705	2·5688254	·19249	·013908	2·1432914
·11	·77	·04055	2·6080382	·20138	·015995	2·2039869
·12	·84	·04401	2·6436202	·20980	·018165	2·2592528
·13	·91	·04745	2·6762661	·21783	·020416	2·3099776
·14	·98	·05082	2·7061160	·22545	·022741	2·3568246
·15	1·05	·05417	2·7338298	·23276	·025136	2·4003311
·16	1·12	·05748	2·7595845	·23976	·027600	2·4409187
·17	1·19	·06076	2·7836294	·24649	·030126	2·4789535
·18	1·26	·06399	2·8061462	·25295	·032712	2·5147151
·19	1·33	·06788	2·8273003	·25921	·035354	2·5484491
·20	1·40	·07034	2·8472342	·26522	·038051	2·5083686
·21	1·47	·07346	2·8660613	·27104	·040798	2·6106457
·22	1·54	·07653	2·8838813	·27666	·043594	2·6394302
·23	1·61	·07957	2·9007824	·28209	·046436	2·6668549
·24	1·68	·08257	2·9168437	·28735	·049321	2·6930369
·25	1·75	·08553	2·9321266	·29245	·052248	2·7180721
·26	1·82	·08844	2·9466954	·29740	·055214	2·7420531
·27	1·89	·09132	2·9606004	·30220	·058084	2·7640582
·28	1·96	·09416	2·9738859	·30686	·061256	2·7871544
·29	2·03	·09696	2·9845947	·31138	·064328	2·8084057
·30	2·10	·09971	2·9987627	·31578	·067432	2·8288671
·31	2·17	·10243	3·0104293	·32005	·070565	2·8485921
·32	2·24	·10509	3·0216126	·32419	·073726	2·8676244
·33	2·31	·10773	3·0323518	·32823	·076914	2·8860074
·34	2·38	·11032	3·0426644	·33215	·080126	2·9037747
·35	2·45	·11286	3·0526783	·33596	·083361	2·9209642
·36	2·52	·11537	3·0621139	·33967	·086618	2·9376084
·37	2·59	·11783	3·0712827	·34328	·089894	2·9537319
·38	2·66	·12025	3·0801083	·34678	·093188	2·9693638
·39	2·73	·12263	3·0886063	·35019	·096500	2·9845291
·40	2·80	·12496	3·0967998	·35350	·099827	2·9992493
·41	2·87	·12725	3·1046721	·35673	·10316	3·0135441
·42	2·94	·12949	3·1122681	·35986	·10652	3·0274362
·43	3·01	·13169	3·1195851	·36290	·10988	3·0409393
·44	3·08	·13385	3·1266371	·36586	·11325	3·0540730
·45	3·15	·13596	3·1334333	·36873	·11664	3·0668529
·46	3·22	·13800	3·1398992	·37149	·12003	3·0792908
·47	3·29	·14006	3·1463230	·37425	·12342	3·0914015
·48	3·36	·14202	3·1523667	·37686	·12682	3·1031976
·49	3·43	·14395	3·1582208	·37941	·13022	3·1146921
·50	3·50	·14583	3·1638568	·38188	·13362	3·1258934

TABLE VII.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	3.57	.14766	I.1692907	.38428	.13702	I.1368141
.52	3.64	.14945	I.1745012	.38659	.14043	I.1474617
.53	3.71	.15117	I.1794892	.38882	.14382	I.1578463
.54	3.78	.15290	I.1844171	.39103	.14722	I.1679763
.55	3.85	.15451	I.1889756	.39308	.15061	I.1778597
.56	3.92	.15610	I.1934223	.39510	.15399	I.1875050
.57	3.99	.15764	I.1976848	.39705	.15736	I.1969170
.58	4.06	.15913	I.2017669	.39892	.16073	I.2061030
.59	4.13	.16057	I.2056737	.40071	.16408	I.2150707
.60	4.20	.16196	I.2094296	.40245	.16742	I.2238234
.61	4.27	.16329	I.2129659	.40409	.17075	I.2323687
.62	4.34	.16459	I.2163573	.40567	.17406	I.2407107
.63	4.41	.16579	I.2195804	.40719	.17735	I.2488548
.64	4.48	.16696	I.2226371	.40862	.18063	I.2568029
.65	4.55	.16808	I.2255320	.40998	.18389	I.2645634
.66	4.62	.16914	I.2282615	.41127	.18712	I.2721371
.67	4.69	.17014	I.2308274	.41249	.19033	I.2795281
.68	4.76	.17108	I.2332222	.41363	.19352	I.2867412
.69	4.83	.17197	I.2354716	.41470	.19668	I.2937780
.70	4.90	.17280	I.2375526	.41569	.19982	I.3006418
.71	4.97	.17356	I.2394679	.41661	.20292	I.3073348
.72	5.04	.17426	I.2412193	.41745	.20599	I.3138603
.73	5.11	.17490	I.2428051	.41822	.20903	I.3202198
.74	5.18	.17558	I.2452242	.41938	.21203	I.3264158
.75	5.25	.17598	I.2454736	.41950	.21500	I.3324490
.76	5.32	.17642	I.2465503	.42002	.21793	I.3383208
.77	5.39	.17678	I.2474526	.42046	.22081	I.3440335
.78	5.46	.17708	I.2481751	.42081	.22365	I.3495866
.79	5.53	.17730	I.2487150	.42107	.22645	I.3549817
.80	5.60	.17744	I.2490634	.42124	.22920	I.3602163
.81	5.67	.17751	I.2492227	.42132	.23189	I.3652982
.82	5.74	.17749	I.2491773	.42129	.23454	I.3702186
.83	5.81	.17738	I.2489218	.42117	.23712	I.3749803
.84	5.88	.17719	I.2484477	.42094	.23965	I.3795827
.85	5.95	.17690	I.2477417	.42060	.24211	I.3840225
.86	6.02	.17651	I.2467926	.42014	.24451	I.3882997
.87	6.09	.17602	I.2455833	.41955	.24683	I.3924106
.88	6.16	.17542	I.2440955	.41884	.24908	I.3963524
.89	6.23	.17470	I.2423059	.41797	.25125	I.4001206
.90	6.30	.17385	I.2401865	.41696	.25334	I.4037118
.91	6.37	.17286	I.2377024	.41577	.25533	I.4071184
.92	6.44	.17171	I.2348088	.41439	.25723	I.4103341
.93	6.51	.17039	I.2314473	.41279	.25902	I.4133495
.94	6.58	.16886	I.2275378	.41093	.26010	I.4151525
.95	6.65	.16712	I.2230394	.40880	.26225	I.4187285
.96	6.72	.16503	I.2175675	.40624	.26366	I.4210568
.97	6.79	.16257	I.2110561	.40320	.26491	I.4231101
.98	6.86	.15955	I.2028969	.39943	.26597	I.4248454
.989	6.923	.15598	I.1930765	.39494	.26673	I.4260749
.990	6.930	.15548	I.1916837	.39431	.26680	I.4261879
.991	6.937	.15499	I.1903254	.39370	.26686	I.4262954
.992	6.944	.15446	I.1888262	.39302	.26692	I.4263967
.993	6.951	.15398	I.1874871	.39241	.26698	I.4264924
.994	6.958	.15328	I.1854991	.39151	.26704	I.4265810
.995	6.965	.15261	I.1836094	.39066	.26709	I.4266629
.996	6.972	.15189	I.1815303	.38973	.26713	I.4267368
.997	6.979	.15106	I.1791572	.38866	.26717	I.4268023
.998	6.986	.15008	I.1763839	.38740	.26721	I.4268576
.999	6.993	.14597	I.1642898	.38207	.26723	I.4269001
I.000	7.000	.14583	I.1638568	.38188	.26725	I.4269234

TABLE VIII.—PIPE EIGHT INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in In.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·008	·00044	1·6457565	·02103	·000016	5·2710668
·002	·016	·00088	1·9477667	·02977	·000042	5·7233645
·003	·024	·00105	3·0245442	·03252	·000096	5·9882586
·004	·032	·00177	3·2491907	·04213	·000148	4·1754474
·005	·040	·00221	3·3462376	·04711	·000208	4·3208384
·006	·048	·00266	3·4250587	·05158	·000272	4·4395081
·007	·056	·00306	3·4867368	·05538	·000344	4·5393550
·008	·064	·00354	3·5493915	·05952	·000424	4·6264544
·009	·072	·00398	3·6001013	·06310	·000504	4·7028134
·010	·080	·00422	3·6456778	·06550	·000588	4·7713425
·011	·088	·00486	3·6869256	·06973	·000680	4·8333597
·02	·16	·00880	3·9448218	·09384	·001664	3·2217329
·03	·24	·01314	2·1188264	·11466	·003052	3·4845213
·04	·32	·01740	2·2406701	·13192	·004684	3·6705757
·05	·40	·02167	2·3360374	·14723	·006528	3·8145731
·06	·48	·02591	2·4135443	·16098	·008548	3·9320000
·07	·56	·03008	2·4783679	·17845	·010740	2·0310582
·08	·64	·03421	2·5342311	·18497	·013080	2·1166815
·09	·72	·03830	2·5832335	·19571	·015560	2·1920344
·10	·80	·04234	2·6268174	·20578	·018168	2·2592753
·11	·88	·04634	2·6660302	·21528	·020892	2·3199708
·12	·96	·05030	2·7016122	·22429	·023728	2·3752367
·13	1·04	·05421	2·7341581	·23285	·026664	2·4259615
·14	1·12	·05809	2·7641090	·24102	·029704	2·4728085
·15	1·20	·06191	2·7918218	·24883	·032832	2·5163150
·16	1·28	·06723	2·8275765	·25929	·036048	2·5569026
·17	1·36	·06944	2·8416214	·26352	·039348	2·5949374
·18	1·44	·07313	2·8641382	·27040	·042728	2·6306990
·19	1·52	·07678	2·8852923	·27710	·046176	2·6644330
·20	1·60	·08039	2·9052262	·28354	·049700	2·6963525
·21	1·68	·08395	2·9240533	·28975	·053288	2·7266296
·22	1·76	·08747	2·9418733	·29576	·056940	2·7554141
·23	1·84	·09094	2·9587744	·30157	·060608	2·7828388
·24	1·92	·09437	2·9748357	·30719	·064420	2·8090208
·25	2·00	·09775	2·9901186	·31265	·068244	2·8340560
·26	2·08	·10108	1·0046874	·31794	·072116	2·8580370
·27	2·16	·10437	1·0185924	·32307	·076040	2·8810421
·28	2·24	·10771	1·0318779	·32804	·080008	2·9031383
·29	2·32	·11081	1·0445867	·33288	·084020	2·9243896
·30	2·40	·11396	1·0567547	·33758	·088072	2·9448510
·31	2·48	·11706	1·0684213	·34215	·092168	2·9645760
·32	2·56	·12011	1·0796046	·34658	·096296	2·9836083
·33	2·64	·12312	1·0903438	·35089	·100460	1·0019913
·34	2·72	·12608	1·1006564	·35508	·104656	1·0197586
·35	2·80	·12899	1·1105703	·35916	·108880	1·0369481
·36	2·88	·13185	1·1201059	·36312	·113132	1·0535923
·37	2·96	·13467	1·1292747	·36697	·117412	1·0697158
·38	3·04	·13743	1·1381003	·37072	·121716	1·0853477
·39	3·12	·14015	1·1465983	·37437	·126040	1·1005130
·40	3·20	·14282	1·1547918	·37791	·130384	1·1295280
·41	3·28	·14543	1·1626641	·38136	·134748	1·1295280
·42	3·36	·14800	1·1702601	·38471	·139128	1·1434201
·43	3·44	·15051	1·1775771	·38796	·143524	1·1569232
·44	3·52	·15297	1·1846291	·39112	·147928	1·1700569
·45	3·60	·15589	1·1914253	·39419	·152348	1·1828368
·46	3·68	·15772	1·1978912	·39714	·156776	1·1952747
·47	3·76	·16007	1·2043150	·40009	·161208	1·2073854
·48	3·84	·16231	1·2103587	·40288	·165644	1·2191815
·49	3·92	·16451	1·2162128	·40561	·170088	1·2306760
·50	4·00	·16666	1·2218488	·40825	·174532	1·2418774

TABLE VIII.—*continued.*

Depth on In- vert. ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth, R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	4.08	.16876	I.2272827	.41100	.178976	I.2527980
.52	4.16	.17080	I.2324932	.41328	.183420	I.2634455
.53	4.24	.17277	I.2374812	.41567	.187856	I.2738302
.54	4.32	.17474	I.2424091	.41803	.192292	I.2839602
.55	4.40	.17659	I.2469676	.42023	.196716	I.2938436
.56	4.48	.17840	I.2514143	.42238	.201136	I.3034889
.57	4.56	.18016	I.2556768	.42446	.205540	I.3129011
.58	4.64	.18186	I.2597589	.42646	.209936	I.3220869
.59	4.72	.18351	I.2636657	.42838	.214316	I.3310446
.60	4.80	.18510	I.2674216	.43024	.218676	I.3398073
.61	4.88	.18662	I.2709579	.43199	.223024	I.3483526
.62	4.96	.18808	I.2743493	.43368	.227348	I.3566946
.63	5.04	.18948	I.2775724	.43530	.231652	I.3648377
.64	5.12	.19082	I.2806291	.43683	.235932	I.3727868
.65	5.20	.19210	I.2835240	.43829	.240192	I.3805473
.66	5.28	.19335	I.2863535	.43972	.244856	I.3881210
.67	5.36	.19445	I.2888194	.44097	.248696	I.3955120
.68	5.44	.19553	I.2912142	.44219	.252768	I.4027251
.69	5.52	.19654	I.2934636	.44334	.256888	I.4097619
.70	5.60	.19749	I.2955446	.44440	.260992	I.4166257
.71	5.68	.19836	I.2974599	.44537	.265044	I.4233187
.72	5.76	.19916	I.2992113	.44628	.269056	I.4298442
.73	5.84	.19989	I.3007971	.44709	.273024	I.4362037
.74	5.92	.20054	I.3022162	.44782	.276948	I.4423997
.75	6.00	.20112	I.3034656	.44847	.280824	I.4484329
.76	6.08	.20162	I.3045423	.44903	.284644	I.4543047
.77	6.16	.20204	I.3054446	.44949	.288412	I.4600174
.78	6.24	.20238	I.3061671	.44987	.292124	I.4655705
.79	6.32	.20263	I.3067070	.45015	.295776	I.4709656
.80	6.40	.20276	I.3070554	.45032	.299364	I.4762002
.81	6.48	.20287	I.3072147	.45041	.302888	I.4812821
.82	6.56	.20284	I.3071693	.45038	.306336	I.4862025
.83	6.64	.20272	I.3069138	.45025	.309716	I.4909642
.84	6.72	.20250	I.3064397	.45001	.313016	I.4955666
.85	6.80	.20218	I.3057337	.44964	.316232	I.5000064
.86	6.88	.20173	I.3047846	.44915	.319360	I.5042836
.87	6.96	.20117	I.3035753	.44852	.322396	I.5083945
.88	7.04	.20048	I.3020775	.44775	.325332	I.5123363
.89	7.12	.19966	I.3002979	.44683	.328172	I.5161045
.90	7.20	.19869	I.2981785	.44574	.330896	I.5196957
.91	7.28	.19755	I.2956944	.44447	.333512	I.5231023
.92	7.36	.19624	I.2928008	.44300	.335980	I.5263180
.93	7.44	.19473	I.2894393	.44128	.338324	I.5293334
.94	7.52	.19298	I.2855298	.43930	.340612	I.5321364
.95	7.60	.19100	I.2810314	.43703	.342540	I.5347124
.96	7.68	.18860	I.2755595	.43429	.344380	I.5370407
.97	7.76	.18580	I.2690481	.43104	.346012	I.5390940
.98	7.84	.18234	I.2608889	.42702	.347396	I.5408293
.989	7.912	.17826	I.2510685	.42221	.348384	I.5420588
.990	7.920	.17769	I.2496857	.42154	.348472	I.5421718
.991	7.928	.17714	I.2483174	.42088	.348560	I.5422793
.992	7.936	.17653	I.2468182	.42015	.348644	I.5423806
.993	7.944	.17598	I.2454791	.41950	.348716	I.5424763
.994	7.952	.17518	I.2434911	.41854	.348788	I.5425649
.995	7.960	.17442	I.2416034	.41715	.348856	I.5426468
.996	7.968	.17359	I.2395223	.41664	.348916	I.5427207
.997	7.976	.17264	I.2371492	.41550	.348968	I.5427862
.998	7.984	.17152	I.2343312	.41417	.349012	I.5428415
.999	7.992	.17072	I.2322818	.41318	.349048	I.5428840
1.000	8.000	.16666	I.2218488	.40825	.349064	I.5429074

TABLES FOR THE SOLUTION OF

TABLE IX.—PIPE NINE INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in fms.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·009	·00049	4·6969090	·02230	·000018	5·3733718
·002	·018	·00099	4·9989192	·03158	·000063	5·8256695
·003	·027	·00119	3·0756967	·03450	·000117	4·0905636
·004	·036	·00199	3·3003432	·04468	·000189	4·2777524
·005	·045	·00249	3·3973901	·04996	·000261	4·4231434
·006	·054	·00299	3·4762112	·05471	·000342	4·5418131
·007	·063	·00345	3·5378893	·05874	·000432	4·6416600
·008	·072	·00398	3·6005440	·06313	·000531	4·7287594
·009	·081	·00447	3·6512548	·06693	·000639	4·8051184
·010	·090	·00497	3·6968303	·07053	·000747	4·8736475
·011	·099	·00547	3·7380781	·07396	·000864	4·9356647
·02	·18	·00990	3·9959743	·09953	·002106	3·3240379
·03	·27	·01479	2·1699789	·10863	·003861	3·5868263
·04	·36	·01958	2·2918226	·13976	·005931	3·7728807
·05	·45	·02438	2·3871899	·15615	·008253	3·9168781
·06	·54	·02915	2·4646968	·17074	·010818	2·0343050
·07	·63	·03384	2·5295204	·18397	·013590	2·1333632
·08	·72	·03849	2·5853836	·19619	·016551	2·2189865
·09	·81	·04309	2·6348860	·20758	·019692	2·2943394
·10	·90	·04763	2·6779699	·21826	·022986	2·3615803
·11	·99	·05214	2·7171827	·22831	·026433	2·4222758
·12	1·08	·05659	2·7527647	·23789	·030024	2·4775417
·13	1·17	·06099	2·7853106	·24797	·033741	2·5282665
·14	1·26	·06386	2·8152605	·25564	·037593	2·5751135
·15	1·35	·06965	2·8429743	·26392	·041553	2·6186200
·16	1·44	·07391	2·8687290	·27187	·045621	2·6592076
·17	1·53	·07812	2·8927739	·27950	·049797	2·6972424
·18	1·62	·08227	2·9152897	·28684	·054072	2·7330040
·19	1·71	·08638	2·9364448	·29391	·058446	2·7667380
·20	1·80	·09044	2·9563787	·30073	·062901	2·7986575
·21	1·89	·09445	2·9752058	·30732	·067437	2·8289346
·22	1·98	·09840	2·9930258	·31369	·072063	2·8577191
·23	2·07	·10231	3·0099269	·31986	·076761	2·8851438
·24	2·16	·10616	3·0259882	·32583	·081531	2·9113258
·25	2·25	·10996	3·0412711	·33161	·086364	2·9363610
·26	2·34	·11372	3·0558399	·33722	·091269	2·9603420
·27	2·43	·11742	3·0697449	·34266	·096237	2·9833471
·28	2·52	·12106	3·0830304	·34794	·101259	3·0054433
·29	2·61	·12466	3·0957392	·35307	·106335	3·0266946
·30	2·70	·12820	3·1079072	·35805	·111465	3·0471560
·31	2·79	·13199	3·1195738	·36289	·116649	3·0668810
·32	2·88	·13513	3·1307571	·36760	·121869	3·0859133
·33	2·97	·13851	3·1414963	·37217	·127143	3·1042963
·34	3·06	·14184	3·1518089	·37662	·132453	3·1220636
·35	3·15	·14511	3·1617228	·38094	·137799	3·1392531
·36	3·24	·14834	3·1712584	·38514	·143181	3·1558973
·37	3·33	·15150	3·1804272	·38923	·148599	3·1720208
·38	3·42	·15462	3·1892528	·39321	·154044	3·1876527
·39	3·51	·15766	3·1977498	·39707	·159516	3·2028180
·40	3·60	·16067	3·2059443	·40084	·165015	3·2183330
·41	3·69	·16361	3·2138166	·40449	·170541	3·2318330
·42	3·78	·16649	3·2214126	·40804	·176085	3·2457251
·43	3·87	·16832	3·2287296	·41149	·181647	3·2592282
·44	3·96	·17210	3·2357815	·41484	·187218	3·2723619
·45	4·05	·17481	3·2425778	·41810	·192687	3·2851418
·46	4·14	·17743	3·2490447	·42123	·198414	3·2975797
·47	4·23	·18008	3·2554675	·42435	·205021	3·3096904
·48	4·32	·18260	3·2615112	·42732	·209646	3·3214865
·49	4·41	·18508	3·2673653	·43021	·215271	3·3329810
·50	4·50	·18750	3·2730013	·43301	·220893	3·3441824

TABLE IX—*continued.*

Depth on In- vert. ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	4.59	.18986	I-2784352	.43573	.226512	I-3551030
.52	4.68	.19215	I-2834457	.43835	.232137	I-3657506
.53	4.77	.19437	I-2886337	.44087	.237753	I-3761352
.54	4.86	.19659	I-2935616	.44338	.243369	I-3862652
.55	4.95	.19866	I-2981201	.44571	.248967	I-3961486
.56	5.04	.20070	I-3025668	.44800	.254556	I-4057939
.57	5.13	.20268	I-3068293	.45020	.260136	I-4152061
.58	5.22	.20460	I-3109114	.45232	.265698	I-4243919
.59	5.31	.20644	I-3148122	.45436	.271242	I-4333596
.60	5.40	.20824	I-3185741	.45633	.276768	I-4421123
.61	5.49	.20994	I-3221104	.45820	.281267	I-4506576
.62	5.58	.21159	I-3255018	.45999	.287739	I-4589996
.63	5.67	.21316	I-3287249	.46170	.293409	I-4671427
.64	5.76	.21467	I-3317816	.46333	.298602	I-4750918
.65	5.85	.21611	I-3346765	.46487	.303984	I-4828523
.66	5.94	.21747	I-3374060	.46634	.309330	I-4904260
.67	6.03	.21876	I-3399719	.46772	.314640	I-4978170
.68	6.12	.21997	I-3423667	.46901	.319914	I-5050301
.69	6.21	.22111	I-3446261	.47023	.325134	I-5120669
.70	6.30	.22217	I-3466971	.47135	.330318	I-5189307
.71	6.39	.22315	I-3486124	.47239	.335448	I-5256237
.72	6.48	.22405	I-3503638	.47334	.340524	I-5321492
.73	6.57	.22487	I-3519496	.47421	.345546	I-5385087
.74	6.66	.22561	I-3533687	.47498	.350514	I-5447047
.75	6.75	.22626	I-3546181	.47567	.355419	I-5507379
.76	6.84	.22682	I-3556948	.47626	.360252	I-5566097
.77	6.93	.22729	I-3565971	.47675	.365022	I-5623224
.78	7.02	.22767	I-3573196	.47715	.369720	I-5678755
.79	7.11	.22796	I-3578595	.47745	.374346	I-5732706
.80	7.20	.22814	I-3582079	.47764	.379782	I-5785052
.81	7.29	.22822	I-3583672	.47773	.383346	I-5835871
.82	7.38	.22820	I-3583218	.47770	.387711	I-5885075
.83	7.47	.22806	I-3580663	.47756	.391959	I-5932692
.84	7.56	.22782	I-3575922	.47730	.396156	I-5978716
.85	7.65	.22744	I-3568862	.47691	.400230	I-6023114
.86	7.74	.22695	I-3559371	.47639	.404190	I-6065886
.87	7.83	.22632	I-3547278	.47573	.408033	I-6106995
.88	7.92	.22554	I-3532400	.47491	.411759	I-6146413
.89	8.01	.22462	I-3514504	.47394	.415341	I-6184095
.90	8.10	.22352	I-3493310	.47278	.418797	I-6220007
.91	8.19	.22225	I-3468469	.47143	.422091	I-6254073
.92	8.28	.22077	I-3439533	.46986	.425232	I-6286230
.93	8.37	.21907	I-3405918	.46805	.428193	I-6316384
.94	8.46	.21711	I-3366823	.46595	.430965	I-6344414
.95	8.55	.21487	I-3321839	.46354	.433521	I-6370174
.96	8.64	.21218	I-3267120	.46063	.435861	I-6393457
.97	8.73	.20902	I-3202006	.45719	.437922	I-6413990
.98	8.82	.20466	I-3120414	.45291	.439677	I-6431343
.989	8.901	.20054	I-3022210	.44782	.440919	I-6443638
.990	8.910	.19991	I-3008382	.44711	.441036	I-6444768
.991	8.919	.19928	I-2994699	.44641	.441144	I-6445843
.992	8.928	.19859	I-2979707	.44564	.441252	I-6446856
.993	8.937	.19798	I-2966316	.44495	.441351	I-6447813
.994	8.946	.19708	I-2946436	.44393	.441441	I-6448699
.995	8.955	.19622	I-2927539	.44292	.441522	I-6449518
.996	8.964	.19528	I-2906748	.44191	.441594	I-6450257
.997	8.973	.19422	I-2883017	.44070	.441657	I-6450912
.998	8.982	.19296	I-2854837	.43928	.441711	I-6451465
.999	8.991	.18768	I-2734343	.43322	.441756	I-6451890
1.000	9.000	.18750	I-2730013	.43301	.441786	I-6452124

TABLE X.—PIPE TEN INCHES IN DIAMETER.

Depth on In- vert \div by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in-Feet.	Area of Cross Section in Square Feet.	log. (A.)
.001	.01	.00055	4.7426665	.02351	.000028	5.4648868
.002	.02	.00110	3.0446767	.03329	.000082	5.9171845
.003	.03	.00132	3.1214542	.03636	.000152	4.1820786
.004	.04	.00221	3.3461007	.04710	.000234	4.3692674
.005	.05	.00277	3.4431476	.05267	.000326	4.5146584
.006	.06	.00332	3.5219687	.05767	.000429	4.6333281
.007	.07	.00383	3.5836468	.06191	.000540	4.7331750
.008	.08	.00442	3.6463015	.06655	.000660	4.8202744
.009	.09	.00497	3.6970113	.07055	.000788	4.8966334
.010	.10	.00552	3.7425878	.07435	.000922	4.9651625
.011	.11	.00607	3.7838356	.07796	.001064	5.0271797
.02	.2	.01100	2.0417318	.10492	.002603	3.4155529
.03	.3	.01643	2.2157364	.12819	.004768	3.6783413
.04	.4	.02175	2.3375801	.14750	.007318	3.8643957
.05	.5	.02709	2.4329474	.16462	.010194	2.0083931
.06	.6	.03239	2.5104543	.17998	.013360	2.1258200
.07	.7	.03760	2.5752779	.19392	.016783	2.2248782
.08	.8	.04277	2.6311411	.20681	.020440	2.3105015
.09	.9	.04787	2.6801435	.21881	.024313	2.3858544
.10	1.0	.05294	2.7238274	.23010	.028385	2.4530953
.11	1.1	.05793	2.7629399	.24069	.032642	2.5137908
.12	1.2	.06288	2.7985222	.25076	.037072	2.5690567
.13	1.3	.06777	2.8310681	.26033	.041664	2.6197815
.14	1.4	.07261	2.8610180	.26947	.046408	2.6666285
.15	1.5	.07739	2.8887318	.27820	.051300	2.7101350
.16	1.6	.08212	2.9144865	.28658	.056324	2.7507226
.17	1.7	.08680	2.9385314	.29462	.061468	2.7887574
.18	1.8	.09142	2.9610482	.30236	.066760	2.8245190
.19	1.9	.09598	2.9822023	.30982	.072152	2.8582530
.20	2.0	.10049	3.0021362	.31701	.077652	2.8901725
.21	2.1	.10494	3.0209633	.32395	.083260	2.9204496
.22	2.2	.10934	3.0387833	.33067	.088968	2.9492341
.23	2.3	.11368	3.0556844	.33717	.094764	2.9766588
.24	2.4	.11796	3.0719457	.34346	.100656	3.0028408
.25	2.5	.12218	3.0870286	.34955	.106628	3.0278760
.26	2.6	.12635	3.1015974	.35547	.112680	3.0518570
.27	2.7	.13044	3.1154024	.36116	.118812	3.0748621
.28	2.8	.13452	3.1287879	.36677	.125012	3.0969583
.29	2.9	.13851	3.1414967	.37217	.131280	3.1182096
.30	3.0	.14245	3.1536657	.37743	.137616	3.1386710
.31	3.1	.14633	3.1653313	.38253	.144008	3.1583960
.32	3.2	.15014	3.1765136	.38749	.150460	3.1774283
.33	3.3	.15390	3.1872538	.39231	.156968	3.1958113
.34	3.4	.15760	3.1975664	.39699	.163520	3.2135786
.35	3.5	.16124	3.2074803	.40155	.170124	3.2307681
.36	3.6	.16482	3.2170159	.40598	.176768	3.2474123
.37	3.7	.16834	3.2261847	.41029	.183456	3.2633558
.38	3.8	.17179	3.2350103	.41448	.190180	3.2791677
.39	3.9	.17519	3.2435083	.41856	.196936	3.2948330
.40	4.0	.17852	3.2517018	.42253	.203728	3.3233480
.41	4.1	.18174	3.2595741	.42637	.210548	3.3233480
.42	4.2	.18500	3.2671701	.43012	.217388	3.3372401
.43	4.3	.18814	3.2744871	.43376	.224252	3.3507432
.44	4.4	.19122	3.2815391	.43729	.231140	3.3638769
.45	4.5	.19424	3.2883353	.44072	.238040	3.3766568
.46	4.6	.19715	3.2948012	.44402	.244956	3.3890947
.47	4.7	.20009	3.3012250	.44731	.251884	3.4012054
.48	4.8	.20289	3.3072687	.45044	.258824	3.4130015
.49	4.9	.20565	3.3131228	.45349	.265760	3.4244960
.50	5.0	.20833	3.3187588	.45643	.272704	3.4356974

TABLE X.—*continued.*

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	5·1	·21095	I·3241927	·45930	·27965	I·4466180
·52	5·2	·21351	I·3294032	·46206	·28659	I·4572659
·53	5·3	·21597	I·3343912	·46526	·29352	I·4676502
·54	5·4	·21843	I·3393191	·46736	·30045	I·4777802
·55	5·5	·22073	I·3438776	·46982	·30736	I·4876636
·56	5·6	·22301	I·3483243	·47224	·31427	I·4973089
·57	5·7	·22521	I·3525868	·47456	·32115	I·5067211
·58	5·8	·22733	I·3566689	·47680	·32802	I·5159069
·59	5·9	·22939	I·3605757	·47894	·33486	I·5248746
·60	6·0	·23138	I·3643316	·48102	·34168	I·5336273
·61	6·1	·23327	I·3678679	·48299	·34848	I·5421726
·62	6·2	·23510	I·3712593	·48487	·35523	I·5505146
·63	6·3	·23685	I·3744824	·48668	·36195	I·5586577
·64	6·4	·23858	I·3775391	·48839	·36864	I·5666068
·65	6·5	·24012	I·3804340	·49002	·37528	I·5743673
·66	6·6	·24164	I·3831635	·49156	·38189	I·5819410
·67	6·7	·24307	I·3857294	·49302	·38844	I·5893320
·68	6·8	·24441	I·3881242	·49438	·39495	I·5965451
·69	6·9	·24568	I·3903736	·49566	·40140	I·6035819
·70	7·0	·24686	I·3924546	·49685	·40776	I·6104457
·71	7·1	·24795	I·3943699	·49795	·41412	I·6171387
·72	7·2	·24895	I·3961213	·49895	·42040	I·6236642
·73	7·3	·24990	I·3977071	·49987	·42660	I·6300237
·74	7·4	·25068	I·3991262	·50068	·43272	I·6362197
·75	7·5	·25140	I·4003756	·50140	·43876	I·6422529
·76	7·6	·25203	I·4014523	·50202	·44472	I·6481247
·77	7·7	·25255	I·4023546	·50255	·45064	I·6538374
·78	7·8	·25297	I·4030771	·50296	·45644	I·6593905
·79	7·9	·25329	I·4036170	·50328	·46212	I·6647856
·80	8·0	·25349	I·4039654	·50348	·46772	I·6700202
·81	8·1	·25358	I·4041247	·50357	·47324	I·6751021
·82	8·2	·25355	I·4040798	·50354	·47864	I·6800225
·83	8·3	·25341	I·4038238	·50340	·48392	I·6847842
·84	8·4	·25313	I·4033497	·50312	·48908	I·6893866
·85	8·5	·25272	I·4026437	·50271	·49408	I·6938264
·86	8·6	·25217	I·4016946	·50152	·49900	I·6981036
·87	8·7	·25146	I·4004853	·50147	·50372	I·7022145
·88	8·8	·25061	I·3989975	·50061	·50832	I·7061563
·89	8·9	·24958	I·3972079	·49958	·51276	I·7099245
·90	9·0	·24836	I·3950885	·49836	·51700	I·7135157
·91	9·1	·24695	I·3926044	·49694	·52108	I·7169223
·92	9·2	·24531	I·3897108	·49529	·52496	I·7201380
·93	9·3	·24341	I·3863493	·49337	·52860	I·7231534
·94	9·4	·24123	I·3824398	·49115	·53204	I·7259564
·95	9·5	·23875	I·3779414	·48862	·53520	I·7285324
·96	9·6	·23575	I·3724695	·48555	·53808	I·7308607
·97	9·7	·23225	I·3659581	·48192	·54064	I·7329140
·98	9·8	·22793	I·3577989	·47741	·54280	I·7346493
·989	9·89	·22283	I·3479785	·47205	·54432	I·7358788
·990	9·90	·22213	I·3465957	·47130	·54448	I·7359918
·991	9·91	·22142	I·3452274	·47056	·54460	I·7360993
·992	9·92	·22066	I·3437282	·46975	·54472	I·7362006
·993	9·93	·21998	I·3423891	·46902	·54484	I·7362963
·994	9·94	·21898	I·3404011	·46797	·54496	I·7363849
·995	9·95	·21802	I·3385114	·46693	·54508	I·7364668
·996	9·96	·21699	I·3364323	·46582	·54516	I·7365407
·997	9·97	·21580	I·3340592	·46454	·54524	I·7366062
·998	9·98	·21441	I·3312412	·45774	·54532	I·7366615
·999	9·99	·20854	I·3191918	·45666	·54536	I·7367040
1·000	10·00	·20833	I·3187588	·45643	·54540	I·7367264

TABLE XI.—PIPE ELEVEN INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.001	.011	.00060	4.7840592	.02466	.000035	5.5476722
.002	.022	.00121	3.0860694	.03491	.000099	5.9999699
.003	.033	.00145	3.1628469	.03814	.000184	4.2648670
.004	.044	.00244	3.3874934	.04940	.000283	4.4520528
.005	.055	.00305	3.4845403	.05524	.000395	4.5974438
.006	.066	.00365	3.5633614	.06049	.000520	4.7161135
.007	.077	.00421	3.6250394	.06494	.000654	4.8159604
.008	.088	.00487	3.6876942	.06979	.000798	4.9020598
.009	.099	.00547	3.7384040	.07399	.000953	4.9794188
.010	.110	.00608	3.7839805	.07798	.001116	3.0479479
.011	.121	.00668	3.8252283	.09175	.001288	3.1099651
.02	.22	.01211	2.0831245	.11004	.003150	3.4983383
.03	.33	.01807	2.2571291	.13445	.005769	3.7611267
.04	.44	.02393	2.3789728	.15470	.008854	3.9471811
.05	.55	.02980	2.4743401	.17265	.012336	2.0911785
.06	.66	.03563	2.5518470	.18877	.016166	2.2086034
.07	.77	.04136	2.6166706	.20339	.020307	2.3076636
.08	.88	.04704	2.6725348	.21690	.024733	2.3928869
.09	.99	.05266	2.7215362	.22949	.029419	2.4686398
.10	1.10	.05822	2.7651201	.24130	.034346	2.5358807
.11	1.21	.06372	2.8043329	.25244	.039498	2.5965762
.12	1.32	.06916	2.8399149	.26300	.044858	2.6518421
.13	1.43	.07455	2.8724608	.27304	.050415	2.7025669
.14	1.54	.07987	2.9024107	.28262	.056158	2.7494139
.15	1.65	.08513	2.9301245	.29178	.062075	2.7929204
.16	1.76	.09033	2.9558792	.30056	.068156	2.8335080
.17	1.87	.09548	2.9799231	.30900	.074394	2.8715428
.18	1.98	.10056	2.0024409	.31712	.080780	2.9073044
.19	2.09	.10557	2.0236050	.32494	.087304	2.9410384
.20	2.20	.11054	2.0435289	.33248	.093963	2.9729579
.21	2.31	.11544	2.0623560	.33976	.10074	2.0032350
.22	2.42	.12027	2.0801760	.34680	.10765	2.0320195
.23	2.53	.12505	2.0970771	.35362	.11466	2.0594442
.24	2.64	.12976	2.1131384	.36022	.12179	2.0856262
.25	2.75	.13441	2.1284213	.36662	.12902	2.1106614
.26	2.86	.13902	2.1430901	.37286	.13634	2.1346424
.27	2.97	.14351	2.1568951	.37883	.14376	2.1576475
.28	3.08	.14797	2.1701806	.38467	.15126	2.1797437
.29	3.19	.15236	2.1828894	.39034	.15885	2.2009950
.30	3.30	.15669	2.1950574	.39584	.16651	2.2214564
.31	3.41	.16096	2.2067240	.40120	.17425	2.2411814
.32	3.52	.16512	2.2179073	.40640	.18205	2.2602137
.33	3.63	.16929	2.2286465	.41146	.18993	2.2785967
.34	3.74	.17336	2.2389591	.41637	.19786	2.2963640
.35	3.85	.17737	2.2488730	.42115	.20585	2.3135535
.36	3.96	.18130	2.2584086	.42562	.21389	2.3301977
.37	4.07	.18517	2.2675774	.43031	.22198	2.3463212
.38	4.18	.18897	2.2764030	.43471	.23011	2.3619531
.39	4.29	.19271	2.2849010	.43899	.23829	2.3771184
.40	4.40	.19638	2.2930945	.44314	.24651	2.3918386
.41	4.51	.19997	2.3009668	.44718	.25476	2.4061334
.42	4.62	.20350	2.3085628	.45111	.26304	2.4200255
.43	4.73	.20696	2.3158798	.45492	.27134	2.4335286
.44	4.84	.21034	2.3229318	.45863	.27968	2.4466623
.45	4.95	.21366	2.3297280	.46223	.28803	2.4594422
.46	5.06	.21687	2.3361939	.46569	.29640	2.4718801
.47	5.17	.22010	2.3426177	.46914	.30478	2.4839908
.48	5.28	.22318	2.3486614	.47243	.31317	2.4957869
.49	5.39	.22621	2.3545155	.47561	.32157	2.5072814
.50	5.50	.22917	2.3601515	.47871	.32997	2.5184827

TABLE XI.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	5.61	.23205	I.3655854	.48172	.33837	I.5294034
.52	5.72	.23485	I.3707959	.48481	.34677	I.5400510
.53	5.83	.23756	I.3757839	.48741	.35516	I.5504356
.54	5.94	.24028	I.3807118	.49018	.36355	I.5605656
.55	5.05	.24281	I.3852700	.49276	.37191	I.5704490
.56	6.16	.24531	I.3897170	.49528	.38027	I.5800943
.57	6.27	.24773	I.3939795	.49772	.38860	I.5895063
.58	6.38	.25007	I.3980616	.50007	.39691	I.5986923
.59	6.49	.25233	I.4019684	.50232	.40519	I.6076600
.60	6.60	.25452	I.4057243	.50450	.41344	I.6164127
.61	6.71	.25660	I.4092606	.50656	.42165	I.6249580
.62	6.82	.25861	I.4126520	.50854	.42983	I.6333000
.63	6.93	.26054	I.4158751	.51043	.43796	I.6414431
.64	7.04	.26238	I.4189318	.51223	.44605	I.6493922
.65	7.15	.26413	I.4218267	.51372	.45410	I.6571527
.66	7.26	.26580	I.4245562	.51556	.46208	I.6647264
.67	7.37	.26738	I.4271221	.51708	.47002	I.6721174
.68	7.48	.26885	I.4295169	.51829	.47789	I.6793305
.69	7.59	.27025	I.4317663	.51986	.48458	I.6853673
.70	7.70	.27155	I.4338473	.52110	.49343	I.6932311
.71	7.81	.27275	I.4357626	.52226	.50110	I.6999241
.72	7.92	.27385	I.4375140	.52331	.50870	I.7064696
.73	8.03	.27485	I.4390998	.52426	.51619	I.7128091
.74	8.14	.27575	I.4405189	.52512	.52360	I.7190051
.75	8.25	.27654	I.4417683	.52588	.53093	I.7250383
.76	8.36	.27723	I.4428450	.52653	.53815	I.7309101
.77	8.47	.27781	I.4437473	.52708	.54528	I.7366228
.78	8.58	.27827	I.4444698	.52751	.55230	I.7421759
.79	8.69	.27862	I.4450097	.52784	.55920	I.7475710
.80	8.80	.27884	I.4453581	.52805	.56598	I.7528056
.81	8.90	.27894	I.4455174	.52815	.57264	I.7578875
.82	9.02	.27891	I.4454720	.52812	.57917	I.7628079
.83	9.13	.27875	I.4452165	.52797	.58555	I.7675696
.84	9.24	.27845	I.4447424	.52768	.59179	I.7721720
.85	9.35	.27799	I.4440354	.52725	.59787	I.7766118
.86	9.46	.27738	I.4430873	.52668	.60379	I.7808890
.87	9.57	.27662	I.4418780	.52594	.60953	I.7849999
.88	9.68	.27567	I.4403902	.52504	.61509	I.7889417
.89	9.79	.27454	I.4386006	.52397	.62045	I.7927099
.90	9.90	.27320	I.4364812	.52269	.62546	I.7962011
.91	10.01	.27164	I.4339971	.52119	.63053	I.7997077
.92	10.12	.26984	I.4311035	.51946	.63521	I.8029234
.93	10.23	.26776	I.4277420	.51746	.63961	I.8059388
.94	10.34	.26536	I.4238325	.51513	.64378	I.8087418
.95	10.45	.26262	I.4193341	.51247	.64761	I.8113178
.96	10.56	.25934	I.4138622	.50925	.65109	I.8136461
.97	10.67	.25548	I.4073508	.50545	.65418	I.8156994
.98	10.78	.25072	I.3991916	.50072	.65680	I.8174347
.989	10.879	.24512	I.3893712	.49509	.65866	I.8186642
.990	10.890	.24433	I.3879884	.49436	.65883	I.8187772
.991	10.901	.24357	I.3866201	.49353	.65899	I.8188847
.992	10.912	.24273	I.3851209	.49268	.65915	I.8189860
.993	10.923	.24198	I.3837818	.49192	.65929	I.8190817
.994	10.934	.24087	I.3817938	.49079	.65943	I.8191703
.995	10.945	.23983	I.3799041	.48972	.65955	I.8192522
.996	10.956	.23868	I.3778250	.48855	.65966	I.8193261
.997	10.967	.23738	I.3754519	.48722	.65976	I.8193916
.998	10.978	.23585	I.3726339	.48564	.65985	I.8194469
.999	10.989	.22939	I.3605845	.47895	.65991	I.8194894
1.000	11.000	.22917	I.3601515	.47871	.65995	I.8195127

TABLE XII.—PIPE TWELVE INCHES IN DIAMETER.

Depth on In- vert. ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.001	.012	.00066	4.8218477	.02575	.000042	5.6232493
.002	.024	.00133	3.1238579	.03646	.000119	4.0755470
.003	.036	.00158	3.2006354	.03983	.000219	4.3404411
.004	.048	.00266	3.4252819	.05159	.000317	4.5276299
.005	.060	.00332	3.5223288	.05769	.000471	4.6730209
.006	.072	.00399	3.6011499	.06317	.000619	4.7916906
.007	.084	.00460	3.6624280	.06782	.000779	4.8915375
.008	.096	.00531	3.7254827	.07290	.000952	4.9786369
.009	.108	.00597	3.7761925	.07728	.001135	3.0549959
.010	.120	.00663	3.8217690	.08144	.001329	3.1235250
.011	.132	.00729	3.8630168	.08540	.001533	3.1855422
.02	.24	.01321	2.1209130	.11493	.003749	3.5739154
.03	.36	.01972	2.2949176	.14042	.006866	3.8367038
.04	.48	.02610	2.4167613	.16157	.010538	2.0275582
.05	.60	.03251	2.5121286	.18032	.014681	2.1667556
.06	.72	.03887	2.5896355	.19715	.019239	2.2841825
.07	.84	.04512	2.6544591	.21243	.024168	2.3832407
.08	.96	.05132	2.7103223	.22654	.029435	2.4688640
.09	1.08	.05745	2.7593247	.23969	.035012	2.5442169
.10	1.20	.06351	2.8029086	.25203	.040875	2.6114578
.11	1.32	.06952	2.8421214	.26367	.047006	2.6721533
.12	1.44	.07545	2.8777034	.27469	.053385	2.7274192
.13	1.56	.08132	2.9102493	.28518	.059999	2.7781440
.14	1.68	.08713	2.9401992	.29518	.066833	2.8249910
.15	1.80	.09287	2.9679130	.30475	.073875	2.8684975
.16	1.92	.09855	2.9936677	.31393	.081112	2.9090851
.17	2.04	.10416	3.0177126	.32274	.088536	2.9471199
.18	2.16	.10970	3.0402294	.33121	.096135	2.9828815
.19	2.28	.11518	3.0613835	.33938	.103900	3.0166155
.20	2.40	.12059	3.0813174	.34726	.111824	3.0485350
.21	2.52	.12593	3.1001445	.35487	.119898	3.0788121
.22	2.64	.13120	3.1179645	.36222	.128114	3.1075966
.23	2.76	.13641	3.1348654	.36934	.136465	3.1350213
.24	2.88	.14155	3.1509269	.37423	.144945	3.1612033
.25	3.00	.14662	3.1662098	.38291	.153546	3.1862385
.26	3.12	.15162	3.1807786	.38939	.162263	3.2102195
.27	3.24	.15656	3.1946836	.39567	.171090	3.2332246
.28	3.36	.16142	3.2079691	.40177	.180020	3.2553208
.29	3.48	.16621	3.2206779	.40769	.189048	3.2765721
.30	3.60	.17094	3.2328459	.41344	.198168	3.2970335
.31	3.72	.17599	3.2445125	.41904	.207376	3.3167585
.32	3.84	.18017	3.2556958	.42447	.216666	3.3357908
.33	3.96	.18468	3.2664350	.42975	.226634	3.3541738
.34	4.08	.18912	3.2767476	.43488	.235473	3.3719411
.35	4.20	.19349	3.2866615	.43987	.244980	3.3891306
.36	4.32	.19778	3.2961971	.44473	.254551	3.4057748
.37	4.44	.20200	3.3053659	.44945	.264179	3.4218983
.38	4.56	.20615	3.3141915	.45404	.273861	3.4375302
.39	4.68	.21022	3.3226895	.45850	.283593	3.4526955
.40	4.80	.21423	3.3308830	.46285	.293370	3.4671705
.41	4.92	.21815	3.3387553	.46706	.303187	3.4817105
.42	5.04	.22199	3.3463513	.47116	.313042	3.4956026
.43	5.16	.22577	3.3536683	.47515	.322928	3.5091057
.44	5.28	.22946	3.3607203	.47902	.332843	3.5222394
.45	5.40	.23308	3.3675445	.48279	.342783	3.5350193
.46	5.52	.23658	3.3739824	.48639	.352742	3.5474572
.47	5.64	.24010	3.3804062	.49000	.362717	3.5595679
.48	5.76	.24347	3.3864499	.49342	.372704	3.5713640
.49	5.88	.24677	3.3923040	.49676	.382700	3.5828585
.50	6.00	.25000	3.3979400	.50000	.392699	3.5940603

TABLE XII.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	6.12	.25314	I.4033739	.50313	.402698	I.6049805
.52	6.24	.25620	I.4085844	.50616	.412694	I.6156281
.53	6.36	.25916	I.4135724	.50908	.422681	I.6260127
.54	6.48	.26212	I.4185008	.51197	.432656	I.6361427
.55	6.60	.26488	I.4230588	.51467	.442615	I.6460261
.56	6.72	.26761	I.4275055	.51731	.452555	I.6556714
.57	6.84	.27025	I.4317680	.51985	.462470	I.6650836
.58	6.96	.27280	I.4358501	.52230	.472356	I.6742694
.59	7.08	.27536	I.4397569	.52466	.482211	I.6832371
.60	7.20	.27765	I.4435128	.52693	.492028	I.6919898
.61	7.32	.27992	I.4470491	.52908	.501805	I.7005351
.62	7.44	.28222	I.4504405	.53115	.511537	I.7088771
.63	7.56	.28422	I.4536636	.53312	.521219	I.7170202
.64	7.68	.28623	I.4567203	.53500	.530847	I.7249693
.65	7.80	.28814	I.4596152	.53679	.540418	I.7327298
.66	7.92	.28996	I.4623447	.53848	.549925	I.7403035
.67	8.04	.29168	I.4649106	.54007	.559364	I.7476945
.68	8.16	.29327	I.4673054	.54156	.568732	I.7549076
.69	8.28	.29481	I.4695548	.54297	.578022	I.7619444
.70	8.40	.29623	I.4716358	.54427	.587230	I.7688082
.71	8.52	.29754	I.4735511	.54547	.596350	I.7755012
.72	8.64	.29874	I.4753025	.54657	.605378	I.7820267
.73	8.76	.29983	I.4768883	.54757	.614308	I.7883862
.74	8.88	.30082	I.4783074	.54847	.623135	I.7945822
.75	9.00	.30168	I.4795568	.54926	.631852	I.8006154
.76	9.12	.30243	I.4806335	.54994	.640453	I.8064872
.77	9.24	.30306	I.4815358	.55051	.648933	I.8121999
.78	9.36	.30356	I.4822583	.55097	.657284	I.8177530
.79	9.48	.30394	I.4827982	.55131	.665500	I.8231481
.80	9.60	.30419	I.4831466	.55153	.673574	I.8283827
.81	9.72	.30430	I.4833059	.55163	.681498	I.8334646
.82	9.84	.30427	I.4832605	.55160	.689263	I.8383850
.83	9.96	.30409	I.4830050	.55144	.696862	I.8431467
.84	10.08	.30376	I.4825309	.55114	.704286	I.8477491
.85	10.20	.30326	I.4818249	.55069	.711523	I.8521889
.86	10.32	.30260	I.4808758	.55009	.718565	I.8564661
.87	10.44	.30176	I.4796665	.54932	.725399	I.8605770
.88	10.56	.30073	I.4781787	.54838	.732013	I.8645188
.89	10.68	.29949	I.4763891	.54726	.738392	I.8682870
.90	10.80	.29803	I.4742697	.54592	.744523	I.8718782
.91	10.92	.29633	I.4717856	.54436	.750386	I.8752848
.92	11.04	.29436	I.4688920	.54255	.755963	I.8785005
.93	11.16	.29209	I.4655305	.54046	.761230	I.8815159
.94	11.28	.28948	I.4616212	.53803	.766159	I.8843189
.95	11.40	.28649	I.4571226	.53525	.770717	I.8868949
.96	11.52	.28291	I.4516507	.53189	.774860	I.8892232
.97	11.64	.27870	I.4451393	.52792	.778532	I.8912765
.98	11.76	.27351	I.4369801	.52298	.781649	I.8930118
.989	11.868	.26739	I.4271597	.51710	.783865	I.8942113
.990	11.880	.26654	I.4257769	.51628	.784069	I.8943543
.991	11.892	.26571	I.4244086	.51547	.784263	I.8944618
.992	11.904	.26479	I.4229094	.51458	.784446	I.8945631
.993	11.916	.26397	I.4215703	.51378	.784619	I.8946588
.994	11.928	.26277	I.4195823	.51261	.784779	I.8947474
.995	11.940	.26163	I.4176926	.51150	.784927	I.8948293
.996	11.952	.26038	I.4156135	.51027	.785061	I.8949032
.997	11.964	.25896	I.4132404	.50888	.785179	I.8949687
.998	11.976	.25728	I.4104224	.50723	.785279	I.8950240
.999	11.988	.25024	I.3983730	.50024	.785356	I.8950665
1.000	12.000	.25000	I.3979400	.50000	.785398	I.8950899

TABLE XIII.—PIPE FIFTEEN INCHES IN DIAMETER.

Depth on In- vert ÷ by Diameter.	Depth on In- vert in In.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·015	·00082	4·9187577	·02879	·000064	5·8170693
·002	·030	·00166	3·2207679	·04077	·000185	4·2693670
·003	·045	·00198	3·2975454	·04454	·000342	4·5342611
·004	·060	·00332	3·5521919	·05768	·000526	4·7214499
·005	·075	·00416	3·6192388	·06450	·000735	4·8668409
·006	·090	·00498	3·6980599	·07063	·000966	4·9855106
·007	·105	·00575	3·7597380	·07583	·001216	5·0858575
·008	·120	·00664	3·8223927	·08150	·001486	5·1724569
·009	·135	·00746	3·8731025	·08640	·001773	5·2488159
·010	·150	·00829	3·9186790	·09106	·002076	5·3173452
·011	·165	·00911	3·9599268	·09549	·002394	5·3793622
·02	·30	·01651	2·2178230	·12850	·005857	5·7677354
·03	·45	·02465	2·3918276	·15700	·010728	5·0305238
·04	·60	·03263	2·5136713	·18065	·016465	5·2165782
·05	·75	·04064	2·6090386	·20161	·022938	5·3605756
·06	·90	·04859	2·6865455	·22043	·030060	5·4780025
·07	1·05	·05641	2·7513691	·23751	·037762	5·5770607
·08	1·20	·06415	2·8072323	·25329	·045991	5·6626840
·09	1·35	·07181	2·8562347	·26799	·054705	5·7380369
·10	1·50	·07939	2·8998186	·28179	·063866	5·8052778
·11	1·65	·08690	2·9390314	·29479	·073446	5·8659733
·12	1·80	·09432	2·9746134	·30712	·083413	5·9212392
·13	1·95	·10166	3·0071593	·31884	·093744	5·9719640
·14	2·10	·11145	3·0471092	·33381	·104418	6·0188110
·15	2·25	·11612	3·0468230	·34073	·115425	6·0623175
·16	2·40	·12319	3·0905777	·35098	·116729	6·1029051
·17	2·55	·13020	3·1146226	·36084	·138303	6·1409399
·18	2·70	·13713	3·1371394	·37031	·150210	6·1767015
·19	2·85	·14397	3·1582935	·37944	·162342	6·2104355
·20	3·00	·15074	3·1782274	·38825	·174717	6·2423550
·21	3·15	·15742	3·1970545	·39676	·187335	6·2726321
·22	3·30	·16401	3·2148745	·40498	·200178	6·3014166
·23	3·45	·17052	3·2317756	·40540	·213219	6·3288413
·24	3·60	·17694	3·2478369	·42064	·226476	6·3550233
·25	3·75	·18328	3·2631198	·42811	·239913	6·3800585
·26	3·90	·18953	3·2776886	·43536	·253530	6·4040395
·27	4·05	·19570	3·2915936	·44238	·267327	6·4270446
·28	4·20	·20178	3·3048791	·44920	·281277	6·4491408
·29	4·35	·20777	3·3175879	·45582	·295380	6·4703921
·30	4·50	·21367	3·3297559	·46225	·309636	6·4908535
·31	4·65	·21949	3·3414225	·46851	·324018	6·5105785
·32	4·80	·22522	3·3526058	·47457	·338535	6·5296108
·33	4·95	·23086	3·3633450	·48048	·353178	6·5479938
·34	5·10	·23640	3·3736576	·48627	·367920	6·5657611
·35	5·25	·24186	3·3835715	·49180	·382779	6·5829506
·36	5·40	·24723	3·3931071	·49723	·397728	6·5995948
·37	5·55	·25251	3·4022759	·50250	·412776	6·6157183
·38	5·70	·25769	3·4111015	·50763	·427905	6·6313502
·39	5·85	·26278	3·4195995	·51262	·443106	6·6465155
·40	6·00	·26779	3·4277990	·51653	·458388	6·6755305
·41	6·15	·27269	3·4356653	·52220	·473733	6·6755305
·42	6·30	·27750	3·4432613	·52678	·489123	6·6894226
·43	6·45	·28221	3·4505783	·53123	·504567	6·7029257
·44	6·60	·28683	3·4576303	·53557	·520065	6·7160594
·45	6·75	·29135	3·4644265	·53978	·535590	6·7288393
·46	6·90	·29573	3·4708924	·54381	·551151	6·7412772
·47	7·05	·30013	3·4773162	·54784	·566739	6·7533879
·48	7·20	·30434	3·4833599	·55167	·582354	6·7651840
·49	7·35	·30847	3·4892140	·55540	·597960	6·7766785
·50	7·50	·31250	3·4939500	·55902	·613592	6·7878799

TABLE XIII.—*continued.*

Depth on In- vert + by Diameter.	Depth on In- vert in fms.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	7·65	·31643	I·5002839	·56252	·629217	I·7988005
·52	7·80	·32025	I·5054944	·56591	·644832	I·8094481
·53	7·95	·32395	I·5104824	·56917	·660438	I·8198327
·54	8·10	·32765	I·5154103	·57240	·676017	I·8299627
·55	8·25	·33110	I·5199688	·57542	·691578	I·8398461
·56	8·40	·33451	I·5244155	·57837	·707112	I·8494914
·57	8·55	·33781	I·5286780	·58121	·722601	I·8589036
·58	8·70	·34101	I·5327601	·58396	·738054	I·8680894
·59	8·85	·34408	I·5366669	·58659	·753453	I·8770571
·60	9·00	·34707	I·5404228	·58913	·768789	I·8858098
·61	9·15	·34991	I·5439591	·59153	·784080	I·8943551
·62	9·30	·35265	I·5473505	·59385	·799272	I·9026971
·63	9·45	·35528	I·5505736	·59605	·814401	I·9108400
·64	9·60	·35779	I·5536303	·59816	·829440	I·9187893
·65	9·75	·36018	I·5565252	·60085	·844398	I·9265498
·66	9·90	·36245	I·5592547	·60204	·859257	I·9341235
·67	10·05	·36460	I·5618206	·60382	·873999	I·9415145
·68	10·20	·36662	I·5642154	·60549	·888642	I·9487276
·69	10·35	·36852	I·5664648	·60706	·90315	I·9557644
·70	10·50	·37029	I·5685458	·60852	·91746	I·9626282
·71	10·65	·37193	I·5704611	·60986	·93177	I·9693212
·72	10·80	·37343	I·5722125	·61109	·94590	I·9758467
·73	10·95	·37480	I·5737983	·61220	·95985	I·9822062
·74	11·10	·37602	I·5752174	·61321	·97362	I·9884022
·75	11·25	·37711	I·5764668	·61409	·98721	I·9944354
·76	11·40	·37805	I·5775435	·61485	1·00062	0·0003072
·77	11·55	·37883	I·5784458	·61549	1·01394	0·0060199
·78	11·70	·37946	I·5791683	·61600	1·01699	0·0115730
·79	11·85	·37993	I·5797082	·61639	1·03977	0·0169681
·80	12·00	·38024	I·5800566	·61663	1·05237	0·0222027
·81	12·15	·38038	I·5802159	·61675	1·06479	0·0272846
·82	12·30	·38034	I·5801705	·61672	1·07694	0·0322050
·83	12·45	·38011	I·5799150	·61653	1·08882	0·0369667
·84	12·60	·37970	I·5794409	·61620	1·10043	0·0415691
·85	12·75	·37908	I·5787349	·61570	1·11168	0·0460089
·86	12·90	·37825	I·5777858	·61502	1·12275	0·0502861
·87	13·05	·37720	I·5765765	·61417	1·13337	0·0543970
·88	13·20	·37591	I·5750887	·61312	1·14372	0·0583385
·89	13·35	·37436	I·5732991	·61185	1·15371	0·0621070
·90	13·50	·37254	I·5711797	·61036	1·16325	0·0656982
·91	13·65	·37041	I·5686956	·60862	1·17243	0·0691048
·92	13·80	·36798	I·5658020	·60660	1·18116	0·0723205
·93	13·95	·36513	I·5624405	·60426	1·18935	0·0753359
·94	14·10	·36185	I·5585310	·60154	1·19709	0·0781389
·95	14·25	·35812	I·5540326	·59843	1·20420	0·0807149
·96	14·40	·35364	I·5485607	·59468	1·21068	0·0830432
·97	14·55	·34837	I·5420493	·59023	1·21644	0·0850965
·98	14·70	·34190	I·5338901	·58472	1·22130	0·0868318
·989	14·835	·33425	I·5240697	·57814	1·22472	0·0880613
·990	14·850	·33318	I·5226869	·57722	1·22508	0·0881743
·991	14·865	·33213	I·5213186	·57631	1·22535	0·0882818
·992	14·880	·33099	I·5198194	·57518	1·22562	0·0883831
·993	14·895	·32998	I·5184803	·57443	1·22589	0·0884788
·994	14·910	·32847	I·5164923	·57312	1·22616	0·0885674
·995	14·925	·32704	I·5146026	·57187	1·22623	0·0886493
·996	14·940	·32548	I·5125235	·57051	1·22661	0·0887232
·997	14·955	·32371	I·5101504	·56895	1·22679	0·0887887
·998	14·970	·32161	I·5073324	·56711	1·22697	0·0888440
·999	14·985	·31281	I·4952830	·55930	1·22706	0·0888865
1·000	15·000	·31250	I·4938500	·55902	1·22718	0·0889099

TABLE XIV.—PIPE EIGHTEEN INCHES IN DIAMETER.

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·018	·000995	4·9979390	·031547	·000072	5·9754318
·002	·036	·001995	3·2999492	·044665	·000252	4·4277295
·003	·054	·002980	3·3767267	·048793	·000468	4·6926236
·004	·072	·003993	3·6018732	·063195	·000756	4·8798124
·005	·090	·004993	3·6984201	·070667	·001044	3·0252034
·006	·108	·005987	3·7772412	·077377	·001368	3·1438731
·007	·126	·006901	3·8389193	·083073	·001728	3·2437200
·008	·144	·007972	3·9015740	·089286	·002124	3·3308194
·009	·162	·008959	3·9522838	·094654	·002556	3·4071784
·010	·180	·009950	3·9978603	·099754	·002988	3·4757075
·011	·198	·01094	2·0391081	·10460	·003456	3·5377247
·02	·36	·01981	2·2970043	·14076	·008424	3·9260979
·03	·54	·02958	2·4710089	·17199	·015444	2·1888663
·04	·72	·03916	2·5928526	·19789	·023724	2·3749407
·05	·90	·04877	2·6882199	·22085	·033012	2·5189381
·06	1·08	·05890	2·7657268	·24202	·043272	2·6363650
·07	1·26	·06769	2·8305504	·26018	·054360	2·7354232
·08	1·44	·07698	2·8864136	·27746	·066204	2·8210465
·09	1·62	·08618	2·9354160	·29356	·078768	2·8963994
·10	1·80	·09527	2·9789999	·30867	·091944	2·9636403
·11	1·98	·10428	3·0182127	·32292	·105732	3·0243358
·12	2·16	·11318	3·0537947	·33643	·120096	3·0796017
·13	2·34	·12199	3·0863406	·34927	·134964	3·1303265
·14	2·52	·13070	3·1162905	·36153	·150372	3·1771735
·15	2·70	·13931	3·1440043	·37325	·166212	3·2206800
·16	2·88	·14732	3·1697590	·38448	·182484	3·2612676
·17	3·06	·15660	3·1938039	·39446	·199188	3·2993024
·18	3·24	·16455	3·2163207	·40565	·216288	3·3350640
·19	3·42	·17277	3·2374748	·41566	·233784	3·3687980
·20	3·60	·18088	3·2574087	·42531	·251604	3·4007175
·21	3·78	·18890	3·2762358	·43462	·269748	3·4309946
·22	3·96	·19681	3·2940558	·44363	·288252	3·4597791
·23	4·14	·20462	3·3109569	·45235	·307044	3·4872038
·24	4·32	·21282	3·3270182	·46079	·326124	3·5133858
·25	4·50	·21993	3·3423011	·46898	·345456	3·5384210
·26	4·68	·22744	3·3568699	·47690	·365076	3·5624020
·27	4·86	·23484	3·3707749	·48460	·384948	3·5854071
·28	5·04	·24213	3·3840604	·49207	·405036	3·6075033
·29	5·22	·24932	3·3967692	·49932	·425340	3·6287546
·30	5·40	·25641	3·4089372	·50637	·445860	3·6492160
·31	5·58	·26339	3·4206038	·51321	·466596	3·6689410
·32	5·76	·27026	3·4317871	·51986	·487476	3·6879733
·33	5·94	·27703	3·4425263	·52633	·508572	3·7062563
·34	6·12	·28368	3·4528389	·53262	·529812	3·7241236
·35	6·30	·29024	3·4627528	·53873	·551196	3·7413131
·36	6·48	·29668	3·4722884	·54468	·572724	3·7579573
·37	6·66	·30301	3·4814572	·55046	·594396	3·7740808
·38	6·84	·30923	3·4902828	·55608	·616176	3·7897127
·39	7·02	·31534	3·4987808	·56155	·638064	3·8048780
·40	7·20	·32134	3·5069743	·56687	·660060	3·8338930
·41	7·38	·32722	3·5148466	·57203	·682164	3·8338930
·42	7·56	·33299	3·5224426	·57706	·704340	3·8477851
·43	7·74	·33865	3·5297596	·58194	·726588	3·8612882
·44	7·92	·34420	3·5368116	·58668	·748872	3·8744219
·45	8·10	·34963	3·5436078	·59129	·770748	3·8872018
·46	8·28	·35487	3·5500737	·59571	·793656	3·8996397
·47	8·46	·36016	3·5564975	·60016	·820084	3·9117504
·48	8·64	·36520	3·5625412	·60432	·838584	3·9235465
·49	8·82	·37016	3·5683953	·60841	·861084	3·9350410
·50	9·00	·37500	3·5740813	·61237	·883572	3·9462424

TABLE XIV.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	9.18	.37972	I-5794652	.61621	.906048	I-9571630
.52	9.36	.38430	I-5846757	.61992	.928548	I-9678106
.53	9.54	.38874	I-5896637	.62349	.951012	I-9781952
.54	9.72	.39318	I-5945916	.62704	.973476	I-9883252
.55	9.90	.39732	I-5991501	.63034	.995868	I-9982086
.56	10.08	.40141	I-6035968	.63357	1.018224	0.0078539
.57	10.26	.40537	I-6078593	.63669	1.040544	0.0172661
.58	10.44	.40920	I-6119414	.63969	1.062792	0.0264519
.59	10.62	.41290	I-6158482	.64257	1.084968	0.0354196
.60	10.80	.41649	I-6196041	.64536	1.107072	0.0441723
.61	10.98	.41989	I-6231404	.64799	1.125068	0.0527176
.62	11.16	.42318	I-6265318	.65052	1.150956	0.0610596
.63	11.34	.42633	I-6297549	.65294	1.173636	0.0692027
.64	11.52	.42935	I-6328116	.65524	1.194408	0.0771518
.65	11.70	.43222	I-6357065	.65743	1.215936	0.0849123
.66	11.88	.43494	I-6384360	.65950	1.237320	0.0924860
.67	12.06	.43752	I-6410019	.66145	1.258560	0.0998770
.68	12.24	.43994	I-6433967	.66328	1.279656	0.1070901
.69	12.42	.44222	I-6456461	.66500	1.300536	0.1141269
.70	12.60	.44370	I-6477271	.66659	1.321272	0.1209907
.71	12.78	.44631	I-6496424	.66806	1.341792	0.1276837
.72	12.96	.44811	I-6513938	.66941	1.362096	0.1342092
.73	13.14	.44975	I-6529796	.67034	1.382184	0.1405687
.74	13.32	.45123	I-6543987	.67173	1.402056	0.1467645
.75	13.50	.45253	I-6556481	.67270	1.421676	0.1527979
.76	13.68	.45365	I-6567248	.67353	1.441003	0.1586697
.77	13.86	.45459	I-6576271	.67423	1.460088	0.1643815
.78	14.04	.45535	I-6583496	.67480	1.478880	0.1699355
.79	14.22	.45592	I-6588895	.67522	1.497384	0.1753306
.80	14.40	.45628	I-6592379	.67549	1.519128	0.1805652
.81	14.58	.45645	I-6593972	.67561	1.533984	0.1856471
.82	14.76	.45640	I-6593518	.67557	1.550844	0.1905675
.83	14.94	.45613	I-6590963	.67538	1.567836	0.1953292
.84	15.12	.45564	I-6586222	.67501	1.584612	0.1999316
.85	15.30	.45490	I-6579162	.67446	1.600920	0.2043714
.86	15.48	.45390	I-6569671	.67372	1.616760	0.2086486
.87	15.66	.45264	I-6557578	.67278	1.632132	0.2127595
.88	15.84	.45109	I-6542700	.67163	1.647036	0.2167013
.89	16.02	.44924	I-6524804	.67025	1.661364	0.2204695
.90	16.20	.44705	I-6503610	.66862	1.675188	0.2240607
.91	16.38	.44450	I-6478769	.66671	1.688364	0.2274673
.92	16.56	.44155	I-6449833	.66449	1.700928	0.2306830
.93	16.74	.43814	I-6416218	.66192	1.712772	0.2336984
.94	16.92	.43422	I-6377123	.65895	1.723860	0.2365014
.95	17.10	.42974	I-6332139	.65555	1.734084	0.2390774
.96	17.28	.42436	I-6277420	.65143	1.743444	0.2414057
.97	17.46	.41805	I-6212306	.64657	1.751688	0.2434590
.98	17.64	.41027	I-6130714	.64052	1.758708	0.2451943
.989	17.802	.40109	I-6032510	.63332	1.763676	0.2464238
.990	17.820	.39982	I-6018682	.63231	1.764144	0.2465368
.991	17.838	.39856	I-6004999	.63132	1.764576	0.2466443
.992	17.856	.39719	I-5990007	.63023	1.765008	0.2467456
.993	17.874	.39596	I-5976616	.62926	1.765404	0.2468413
.994	17.892	.39416	I-5956736	.62782	1.765764	0.2469299
.995	17.910	.39244	I-5937839	.62645	1.766088	0.2470118
.996	17.928	.39057	I-5917048	.62496	1.766376	0.2470857
.997	17.946	.38844	I-5893317	.62325	1.766628	0.2471512
.998	17.964	.38593	I-5865137	.62123	1.766844	0.2472065
.999	17.982	.37537	I-5744643	.61267	1.767024	0.2472490
1.000	18.000	.37500	I-5740313	.61237	1.767144	0.2472724

TABLE XV.—PIPE TWENTY-ONE INCHES IN DIAMETER.

Depth on In- vert. + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·021	·001161	3·0648749	·03405	·000129	4·1098253
·002	·042	·002327	3·3668896	·04824	·000364	4·5616230
·003	·063	·002777	3·4436697	·05270	·000671	4·8265201
·004	·084	·004659	3·6683113	·06825	·001032	3·0137059
·005	·105	·005826	3·7653648	·07633	·001442	3·1590969
·006	·126	·006985	3·8441850	·08358	·001893	3·2770645
·007	·147	·008052	3·9058619	·08973	·002386	3·3776135
·008	·168	·009301	3·9685168	·09644	·002915	3·4647129
·009	·189	·010428	2·0192305	·10247	·003476	3·5410719
·010	·210	·011609	2·0648099	·10774	·004071	3·6096010
·011	·231	·012765	2·1060514	·11298	·004695	3·6716182
·02	·42	·023117	2·3639497	·15204	·011481	2·0499914
·03	·63	·034510	2·5379537	·18577	·021027	2·3227798
·04	·84	·045687	2·6597983	·21423	·032272	2·5088343
·05	1·05	·056907	2·7551658	·23855	·044960	2·6528316
·06	1·26	·068025	2·8326727	·26081	·058783	2·7692585
·07	1·47	·078976	2·8974966	·28167	·074014	2·8693167
·08	1·68	·089817	2·9533602	·29969	·090144	2·9549400
·09	1·89	·10054	1·0023621	·31708	·10724	1·0302929
·10	2·00	·11115	1·0459465	·33340	·12518	1·0975358
·11	2·21	·12166	1·0851590	·34880	·14395	1·1582293
·12	2·52	·13205	1·1207410	·36338	·16349	1·2134952
·13	2·72	·14232	1·1532872	·37726	·18374	1·2642200
·14	2·94	·15248	1·1832371	·39049	·20467	1·3110670
·15	3·15	·16253	1·2109509	·40315	·22624	1·3545734
·16	3·36	·17246	1·2367056	·41529	·24840	1·3951611
·17	3·57	·18228	1·2607474	·42694	·27114	1·4331959
·18	3·78	·19198	1·2832635	·43816	·29441	1·4689575
·19	3·99	·20156	1·3044189	·44896	·31819	1·5026915
·20	4·20	·21054	1·3233529	·45885	·34246	1·5346113
·21	4·41	·22038	1·3431780	·46944	·36718	1·5648881
·22	4·62	·22962	1·3610017	·47944	·39234	1·5936726
·23	4·83	·23872	1·3779034	·48860	·41696	1·6200974
·24	5·04	·24772	1·3939633	·49771	·44388	1·6472693
·25	5·25	·25659	1·4092460	·50655	·47024	1·6723428
·26	5·46	·26534	1·4238145	·51511	·49693	1·6962955
·27	5·67	·27398	1·4377216	·52342	·51275	1·7183006
·28	5·88	·28249	1·4510060	·53149	·53131	1·7413968
·29	6·09	·29087	1·4637056	·53932	·54895	1·7626481
·30	6·30	·29914	1·4758820	·54694	·56688	1·7831095
·31	6·51	·30799	1·4885504	·55497	·58507	1·8028345
·32	6·72	·31603	1·4997361	·56217	·60353	1·8218668
·33	6·93	·32320	1·5094728	·56850	·62222	1·8402498
·34	7·14	·33020	1·5197853	·57529	·64113	1·8580172
·35	7·35	·33860	1·5296994	·58190	·65852	1·8742066
·36	7·56	·34612	1·5392351	·58832	·67795	1·8918508
·37	7·77	·35351	1·5484038	·59456	·69904	1·9079743
·38	7·98	·36076	1·5572295	·60064	·71871	1·9236142
·39	8·19	·36789	1·5657274	·60654	·73880	1·9387715
·40	8·40	·37490	1·5739203	·61229	·75944	1·9534917
·41	8·61	·38176	1·5817932	·61786	·78051	1·9677866
·42	8·82	·38840	1·5893892	·62329	·80169	1·9816786
·43	9·03	·39509	1·5967062	·62863	·82386	1·9951817
·44	9·24	·40156	1·6037583	·63369	·84652	0·0083154
·45	9·45	·40790	1·6105543	·63867	·86973	0·0200953
·46	9·66	·41401	1·6170192	·64344	·89344	0·0335332
·47	9·87	·42018	1·6234441	·64821	·91769	0·0456439
·48	10·08	·42607	1·6294878	·65275	·94250	0·0574400
·49	10·29	·43185	1·6353418	·65715	·96791	0·0689345
·50	10·50	·43750	1·6464018	·66143	·99377	0·0791358

TABLE XV.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	10·71	·44299	I·6409780	·66558	1·23326	0·0910554
·52	10·92	·44835	I·6516223	·66959	1·26387	0·1017041
·53	11·13	·45353	I·6566096	·67345	1·29145	0·1110887
·54	11·34	·45871	I·6615382	·67728	1·32508	0·1222187
·55	11·55	·46247	I·6650868	·68021	1·35558	0·1321021
·56	11·76	·46831	I·6705433	·68433	1·38594	0·1417474
·57	11·97	·47293	I·6748057	·68771	1·41631	0·1511596
·58	12·18	·47740	I·6788880	·69094	1·44992	0·1603454
·59	12·39	·48189	I·6829520	·69418	1·47677	0·1693131
·60	12·60	·48589	I·6865407	·69706	1·50683	0·1780658
·61	12·81	·48987	I·6900869	·69991	1·53677	0·1866111
·62	13·02	·49389	I·6936323	·70277	1·56659	0·1949531
·63	13·23	·49739	I·6967005	·70526	1·59623	0·2030962
·64	13·44	·50090	I·6997584	·70774	1·62571	0·2110453
·65	13·65	·50426	I·7026613	·71011	1·65503	0·2188058
·66	13·86	·50743	I·7053827	·71234	1·68410	0·2263795
·67	14·07	·51044	I·7079485	·71445	1·71305	0·2337705
·68	14·28	·51326	I·7103432	·71642	1·74174	0·2409836
·69	14·49	·51228	I·7125994	·71828	1·77020	0·2480224
·70	14·70	·51841	I·7146737	·72000	1·79839	0·2548842
·71	14·91	·52070	I·7165891	·72159	1·82632	0·2615772
·72	15·12	·52280	I·7183404	·72305	1·84970	0·2671027
·73	15·33	·52471	I·7199262	·72437	1·88131	0·2744622
·74	15·54	·52643	I·7213452	·72555	1·91274	0·2806582
·75	15·75	·52795	I·7225988	·72660	1·93504	0·2866914
·76	15·96	·52926	I·7236715	·72750	1·96183	0·2925632
·77	16·17	·53036	I·7253027	·72826	1·98735	0·3038290
·78	16·38	·53125	I·7258388	·72870	2·01293	0·3088976
·79	16·59	·53191	I·7261795	·72932	2·03656	0·3144613
·80	16·80	·53232	I·7263439	·72960	2·06282	0·3195406
·81	17·01	·53252	I·7263439	·72974	2·08708	0·3195406
·82	17·22	·53247	I·7262985	·73970	2·11086	0·3244610
·83	17·43	·53216	I·7260430	·73033	2·13409	0·3292141
·84	17·64	·53158	I·7255715	·72909	2·15689	0·3338271
·85	17·85	·53071	I·7248628	·72850	2·17906	0·3382692
·86	18·06	·52955	I·7239137	·72770	2·20060	0·3425421
·87	18·27	·52808	I·7227044	·72669	2·22153	0·3466530
·88	18·48	·52627	I·7212167	·72545	2·24178	0·3505948
·89	18·69	·52411	I·7194261	·72395	2·26132	0·3543630
·90	18·90	·52156	I·7173076	·72219	2·28009	0·3579542
·91	19·11	·51858	I·7148235	·72013	2·29805	0·3613608
·92	19·32	·51514	I·7119299	·71773	2·31513	0·3645765
·93	19·53	·51117	I·7085711	·71496	2·33126	0·3675919
·94	19·74	·50659	I·7046590	·71175	2·34630	0·3703949
·95	19·95	·50138	I·7001673	·70808	2·36031	0·3729709
·96	20·16	·49509	I·6946885	·70362	2·37300	0·3752992
·97	20·37	·48772	I·6881772	·69837	2·38425	0·3773525
·98	20·58	·47864	I·6800180	·69184	2·39379	0·3790878
·989	20·769	·46687	I·6891976	·68328	2·40053	0·3803173
·990	20·790	·46646	I·6688145	·68297	2·40121	0·3804303
·991	20·811	·46499	I·6674525	·68190	2·40734	0·3804378
·992	20·832	·46339	I·6659473	·68072	2·40236	0·3806391
·993	20·853	·46197	I·6646158	·67968	2·40284	0·3807248
·994	20·874	·45985	I·6626202	·67812	2·40338	0·3808234
·995	20·895	·45785	I·6607305	·67665	2·40383	0·3809053
·996	20·916	·45567	I·6586514	·67503	2·40424	0·3809794
·997	20·937	·45318	I·6562772	·67319	2·40461	0·3810447
·998	20·958	·45025	I·6534603	·67101	2·40491	0·3811000
·999	20·979	·43794	I·6414162	·66024	2·40515	0·3811425
1·000	21·000	·43750	I·6409780	·66143	2·40527	0·3811654

TABLE XVI.—PIPE TWENTY-FOUR INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
001	024	001327	3.1228777	03642	000168	1.2253093
002	048	002660	3.4248879	05157	000476	4.6776070
003	072	003174	3.5016654	05634	000876	4.9425011
004	096	005224	3.7263119	07297	001268	3.5445699
005	120	006558	3.8233588	08159	001884	3.2750809
006	144	007983	3.9021799	08934	002476	3.3937506
007	168	009201	3.9638580	09592	003016	3.4935975
008	192	010629	2.0265127	10310	003808	3.6806969
009	216	011946	2.0772225	10930	004540	3.6570559
010	240	013267	2.1227990	11518	005316	3.7255850
011	264	014590	2.1640468	12079	006132	3.7876022
02	48	026420	2.4219430	16254	014996	2.1759754
03	72	039441	2.5959476	19860	027464	2.4387638
04	96	052215	2.7177913	22850	042152	2.6248182
05	120	065036	2.8131586	25502	058724	2.7688156
06	144	077743	2.8906655	27883	076956	2.8862425
07	168	090258	2.9554891	30043	096672	2.9853007
08	192	10265	1.0113523	32039	117740	1.0709240
09	216	11491	1.0603547	33898	140048	1.1462769
10	240	12704	1.1039386	35642	163500	1.2135178
11	264	13904	1.1431514	37288	188024	1.2742133
12	288	15092	1.1787334	38669	213540	1.3294792
13	312	16266	1.2112793	40331	239996	1.3802040
14	336	17427	1.2412292	41746	267332	1.4270510
15	360	18575	1.2689430	43100	295500	1.4705575
16	384	16710	1.2946977	44396	324448	1.5111451
17	408	20832	1.3187426	45642	354144	1.5491799
18	432	21941	1.3412594	46841	384540	1.5849415
19	456	23036	1.3624135	47996	415600	1.6186755
20	480	24118	1.3823474	49110	447296	1.6505950
21	504	25187	1.4011745	50186	479592	1.6808721
22	528	26242	1.4189945	51227	512456	1.7096566
23	552	27283	1.4358956	52223	545860	1.7370813
24	576	28311	1.4519569	53208	577780	1.7632633
25	600	29325	1.4672398	54152	614284	1.7882985
26	624	30325	1.4818086	55069	649052	1.8122795
27	648	31212	1.4957136	55957	684360	1.8352846
28	672	32284	1.5089991	56819	720080	1.8573801
29	696	33243	1.5217079	57657	756192	1.8786321
30	720	34188	1.5338759	58470	792672	1.8990935
31	744	35119	1.5455425	59261	829504	1.9188185
32	768	36035	1.5567258	60029	866664	1.9378508
33	792	36937	1.5674650	60776	906536	1.9562338
34	816	37825	1.5777776	61502	941892	1.9740011
35	840	38699	1.5876915	62208	979920	1.9911906
36	864	39557	1.5972271	62894	1.018204	0.0078348
37	888	40401	1.6063959	63562	1.056716	0.0239583
38	912	41231	1.6152215	64211	1.095444	0.0395902
39	936	42045	1.6237195	64842	1.034372	0.0547555
40	960	42846	1.6319130	65457	1.173480	0.0837705
41	984	43630	1.6397853	66053	1.212748	0.0837705
42	1008	44400	1.6473813	66633	1.252168	0.0976626
43	1032	45154	1.6546983	67197	1.291712	0.1111657
44	1056	45893	1.6617503	67744	1.331372	0.1242994
45	1080	46617	1.6685465	68276	1.371132	0.1370793
46	1104	47316	1.6750124	68787	1.410968	0.1495172
47	1128	48021	1.6814362	69297	1.450868	0.1616279
48	1152	48694	1.6874799	69781	1.490816	0.1734240
49	1176	49355	1.6933340	70253	1.530800	0.1849185
50	1200	50000	1.6989700	70711	1.570797	0.1961199

TABLE XVI.—*continued.*

Depth on In- vert. ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	12·24	·50629	I·7044039	·71155	1·610792	0·2070405
·52	12·48	·41240	I·7096144	·71582	1·650776	0·2176881
·53	12·72	·51833	I·7146024	·71995	1·690724	0·2280727
·54	12·96	·52424	I·7195803	·72404	1·730624	0·2382027
·55	13·20	·52977	I·7240888	·72785	1·770460	0·2480861
·56	13·44	·53522	I·7285355	·73159	1·810220	0·2577314
·57	13·68	·54050	I·7327980	·73519	1·849880	0·2671486
·58	13·92	·54559	I·7368701	·73864	1·889424	0·2763294
·59	14·16	·55053	I·7407869	·74198	1·928844	0·2852971
·60	14·44	·55532	I·7445428	·74520	1·968112	0·2940498
·61	14·64	·55985	I·7480791	·74823	2·047220	0·3025951
·62	14·88	·56425	I·7514705	·75116	2·046148	0·3109371
·63	15·12	·56846	I·7546936	·75395	2·084843	0·3190802
·64	15·36	·57247	I·7577503	·75661	2·123388	0·3270293
·65	15·60	·57629	I·7606452	·75914	2·161672	0·3347898
·66	15·84	·57993	I·7633747	·76153	2·199700	0·3423635
·67	16·08	·58337	I·7659406	·76378	2·237456	0·3497545
·68	16·32	·58659	I·7683354	·76589	2·274928	0·3569676
·69	16·56	·58364	I·7705848	·76788	2·312088	0·3640044
·70	16·80	·59247	I·7726658	·76972	2·348920	0·3708682
·71	17·04	·59509	I·7745811	·77142	2·385400	0·3775612
·72	17·28	·59949	I·7763325	·77297	2·421512	0·3840867
·73	17·52	·59967	I·7779183	·77439	2·457232	0·3904462
·74	17·76	·60164	I·7793374	·77565	2·492540	0·3966422
·75	18·00	·60337	I·7805868	·77677	2·527408	0·4026754
·76	18·24	·60487	I·7816635	·77774	2·561812	0·4085472
·77	18·48	·60613	I·7825658	·77854	2·595732	0·4142599
·78	18·72	·60713	I·7832883	·77919	2·629136	0·4198130
·79	18·96	·60789	I·7838282	·77967	2·662000	0·4252081
·80	19·20	·60838	I·7841766	·77999	2·694296	0·4304427
·81	19·44	·60864	I·7843359	·78013	2·725992	0·4355246
·82	19·68	·60854	I·7842905	·78009	2·757052	0·4404450
·83	19·92	·60818	I·7840350	·77986	2·787448	0·4452067
·84	20·16	·60752	I·7835609	·77944	2·817144	0·4498091
·85	20·20	·60653	I·7828549	·77880	2·846092	0·4542489
·86	20·64	·60521	I·7819054	·77795	2·874260	0·4585261
·87	20·88	·60352	I·7806965	·77657	2·901596	0·4626370
·88	21·12	·60146	I·7792087	·77554	2·928052	0·4665788
·89	21·36	·59899	I·7774191	·77394	2·953568	0·4703470
·90	21·60	·50607	I·7752997	·77205	2·978092	0·4739382
·91	21·84	·59267	I·7728156	·76985	3·001544	0·4773448
·92	22·10	·58874	I·7699220	·76729	3·023852	0·4805605
·93	22·32	·58420	I·7665605	·76433	3·044920	0·4835759
·94	22·56	·57896	I·7626510	·76089	3·064636	0·4863789
·95	22·80	·57300	I·7581526	·75696	3·082868	0·4889549
·96	23·04	·56582	I·7526807	·75221	3·099440	0·4912832
·97	23·28	·55740	I·7461693	·74659	3·114128	0·4933365
·98	23·52	·54703	I·7380101	·73961	3·126596	0·4950718
·989	23·73	·53479	I·7281897	·73130	3·135460	0·4963013
·990	23·76	·53309	I·7268069	·73013	3·136276	0·4964143
·991	23·78	·53147	I·7254386	·72898	3·137052	0·4965218
·992	23·80	·53959	I·7239394	·72772	3·137784	0·4966231
·993	23·83	·52808	I·7227003	·72669	3·138476	0·4967188
·994	23·85	·52555	I·7206123	·72494	3·139116	0·4968074
·995	23·88	·52327	I·7187226	·72337	3·139708	0·4968693
·996	23·90	·52077	I·7166435	·72164	3·140244	0·4969632
·997	23·92	·51793	I·7142704	·71967	3·140716	0·4970287
·998	23·95	·51458	I·7114524	·71734	3·141116	0·4970840
·999	23·97	·50050	I·6994003	·70746	3·141424	0·4971265
1·000	24·00	·50000	I·6989700	·70711	3·141593	0·4971499

TABLE XVII.—PIPE TWENTY-SEVEN INCHES IN DIAMETER.

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·001	·027	·001493	3·1740234	·03863	·000213	4·3276143
·002	·054	·002993	3·4760341	·05470	·000603	4·7799120
·003	·081	·003572	3·5528142	·05975	·001114	3·0448091
·004	·108	·005991	3·7774558	·07739	·001706	3·2319949
·005	·135	·007491	3·8745093	·08657	·002385	3·3773859
·006	·162	·008982	3·9533295	·09476	·003128	3·4953535
·007	·189	·010351	2·0150064	·10174	·003944	3·5959025
·008	·216	·011958	2·0776613	·10960	·004819	3·6830019
·009	·243	·013439	2·1283750	·11592	·005746	3·7593609
·010	·270	·014926	2·1739514	·12245	·006728	3·8278900
·011	·297	·016413	2·2151959	·12664	·007761	3·8899072
·02	·54	·029723	2·4730952	·17240	·018979	2·2782804
·03	·81	·044370	2·6470982	·21064	·034759	2·5410688
·04	1·08	·058741	2·7689428	·24236	·053348	2·7271233
·05	1·35	·073166	2·8643103	·27049	·074151	2·8701206
·06	1·62	·087461	2·9418172	·29573	·097173	2·9875475
·07	1·89	·10154	3·0066411	·31865	·12235	3·0876057
·08	2·16	·11547	3·0625047	·33982	·14901	3·1732290
·09	2·43	·12927	3·1115066	·35954	·17724	3·2485819
·10	2·70	·14291	3·1550910	·37804	·20692	3·3158228
·11	2·97	·15642	3·1943035	·39550	·23796	3·3765183
·12	3·24	·16977	3·2298855	·41204	·27088	3·4317842
·13	3·51	·18299	3·2624317	·42777	·30374	3·4825090
·14	3·78	·19601	3·2923816	·44278	·34622	3·5393560
·15	4·05	·20897	3·3200954	·45713	·37399	3·5728625
·16	4·32	·22174	3·3458501	·47089	·41062	3·6134501
·17	4·59	·23436	3·3698919	·48411	·44821	3·6514849
·18	4·86	·24683	3·3924080	·49682	·48668	3·6872465
·19	5·13	·25915	3·4135634	·50907	·52599	3·7209805
·20	5·40	·27070	3·4324974	·52029	·56597	3·7528003
·21	5·67	·28334	3·4523225	·53230	·60698	3·7831771
·22	5·94	·29522	3·4701462	·54334	·64857	3·8119616
·23	6·21	·30693	3·4870479	·55401	·68924	3·8383764
·24	6·48	·31849	3·5031078	·56435	·73376	3·8655583
·25	6·75	·32990	3·5183905	·57437	·77737	3·8906318
·26	7·02	·34116	3·5329590	·58408	·82145	3·9145845
·27	7·29	·35307	3·5468661	·59351	·86415	3·9365895
·28	7·56	·36320	3·5601505	·60266	·91135	3·9596858
·29	7·83	·37398	3·5728501	·61013	·95705	3·9809371
·30	8·10	·38461	3·5850275	·62017	1·00322	4·0013985
·31	8·37	·39599	3·5976949	·62927	1·04984	4·0211235
·32	8·64	·40539	3·6078806	·63670	1·09687	4·0401558
·33	8·91	·41554	3·6186173	·64462	1·14429	4·0585388
·34	9·18	·42552	3·6289298	·65232	1·19208	4·0763062
·35	9·45	·43539	3·6388439	·65981	1·23735	4·0924956
·36	9·72	·44502	3·6483796	·66709	1·28866	4·1101398
·37	9·99	·45451	3·6575483	·67417	1·33740	4·1262633
·38	10·26	·46384	3·6663740	·68106	1·38964	4·1429032
·39	10·53	·47301	3·6748719	·68775	1·43568	4·1570605
·40	10·80	·48201	3·6830648	·69427	1·48518	4·1717807
·41	11·07	·49083	3·6909377	·70059	1·53488	4·1860756
·42	11·34	·49949	3·6985337	·70675	1·58842	4·1999676
·43	11·61	·50798	3·7058507	·71273	1·63482	4·2134707
·44	11·88	·51630	3·7129028	·71854	1·68501	4·2266044
·45	12·15	·52444	3·7196988	·72418	1·73134	4·2383843
·46	12·42	·53230	3·7261637	·72959	1·78575	4·2518222
·47	12·69	·54273	3·7345886	·73670	1·84473	4·2639329
·48	12·96	·54781	3·7386323	·74014	1·88681	4·2757290
·49	13·23	·55524	3·7444863	·74514	1·93741	4·2872235
·50	13·50	·56250	3·7501225	·74999	1·98803	4·2974248

TABLE XVII.—*continued.*

Depth on In- vert \div by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	13.77	.56958	I-7555563	.75470	2.03865	0.3093444
.52	14.04	.57645	I-7607668	.75924	2.08926	0.3199931
.53	14.31	.58311	I-7657541	.76361	2.13490	0.3293777
.54	14.58	.58977	I-7706827	.76796	2.19032	0.3405077
.55	14.85	.59460	I-7742313	.77110	2.24071	0.3503862
.56	15.12	.60226	I-7797878	.77605	2.29105	0.3600364
.57	15.39	.60806	I-7839504	.77974	2.34125	0.3694486
.58	15.66	.61380	I-7880325	.78345	2.39130	0.3786344
.59	15.93	.61957	I-7920965	.78713	2.43950	0.3873021
.60	16.20	.62500	I-7956852	.79039	2.49089	0.3963548
.61	16.47	.62984	I-7992314	.79362	2.54038	0.4049001
.62	16.74	.63500	I-8027768	.79687	2.58965	0.4132421
.63	17.01	.63950	I-8058450	.79969	2.62050	0.4183852
.64	17.28	.64402	I-8089029	.80251	2.68741	0.4293343
.65	17.55	.64834	I-8118058	.80519	2.73586	0.4370948
.66	17.82	.65241	I-8145272	.80772	2.78399	0.4446685
.67	18.09	.65628	I-8170930	.81011	2.83178	0.4520595
.68	18.36	.65991	I-8194877	.81235	2.87920	0.4592726
.69	18.63	.66335	I-8217439	.81446	2.92623	0.4663094
.70	18.90	.66652	I-8238182	.81641	2.97285	0.4731732
.71	19.17	.66947	I-8257336	.81821	3.01902	0.4798662
.72	19.44	.67217	I-8274849	.81986	3.05768	0.4853917
.73	19.71	.67463	I-8290707	.82136	3.10993	0.4927512
.74	19.98	.67684	I-8304897	.82270	3.15462	0.4989472
.75	20.25	.67880	I-8317433	.82389	3.19875	0.5049804
.76	20.52	.68048	I-8328160	.82491	3.24229	0.5108522
.77	20.79	.68189	I-8337183	.82577	3.28522	0.5165649
.78	21.06	.68304	I-8344472	.82646	3.32749	0.5221180
.79	21.33	.68388	I-8349833	.82697	3.36656	0.5271866
.80	21.60	.68443	I-8353290	.82730	3.40996	0.5327503
.81	21.87	.68461	I-8354884	.82745	3.45008	0.5378296
.82	22.14	.68460	I-8354430	.82741	3.48939	0.5427500
.83	22.41	.68420	I-8351875	.82716	3.52786	0.5475117
.84	22.68	.68346	I-8347160	.82671	3.56544	0.5521141
.85	22.95	.68235	I-8340073	.82604	3.60210	0.5565562
.86	23.22	.68086	I-8330582	.82514	3.63773	0.5608311
.87	23.49	.67896	I-8318489	.82399	3.67239	0.5649420
.88	23.76	.67664	I-8303612	.82258	3.70581	0.5688838
.89	24.03	.67386	I-8285706	.82089	3.73810	0.5726520
.90	24.30	.67058	I-8264521	.81889	3.76914	0.5762432
.91	24.57	.66675	I-8239680	.81655	3.79882	0.5796498
.92	24.84	.66233	I-8210744	.81383	3.82706	0.5828655
.93	25.11	.65731	I-8177156	.81069	3.85372	0.5858809
.94	25.38	.65133	I-8138035	.80705	3.87867	0.5886839
.95	25.65	.64463	I-8093118	.80288	3.90175	0.5912599
.96	25.92	.63640	I-8037330	.79774	3.83343	0.5835882
.97	26.19	.62707	I-7973217	.79188	3.94131	0.5956415
.98	26.46	.61540	I-7891625	.78447	3.95709	0.5973768
.989	26.703	.60026	I-7783421	.77476	3.96831	0.5986063
.990	26.730	.59973	I-7779590	.77442	3.96934	0.5987193
.991	26.757	.59785	I-7765970	.77321	3.97031	0.5988251
.992	26.784	.59578	I-7750918	.77187	3.97125	0.5989281
.993	26.811	.59396	I-7737602	.77069	3.97213	0.5990238
.994	26.838	.59124	I-7717647	.76892	3.97294	0.5991124
.995	26.865	.58867	I-7698750	.76725	3.97369	0.5991943
.996	26.892	.58586	I-7677959	.76541	3.97436	0.5992674
.997	26.919	.58266	I-7654217	.76332	3.97495	0.5993337
.998	26.946	.57890	I-7626048	.76085	3.97547	0.5993890
.999	26.973	.56306	I-7505607	.75037	3.97586	0.5994315
1.000	27.000	.56250	I-7501225	.74999	3.97607	0.5994544

TABLE XVIII.—PIPE THIRTY INCHES IN DIAMETER.

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth, R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.001	.030	.001658	3.2197809	.04073	.000263	4.4191293
.002	.060	.002647	3.4217916	.05133	.000744	4.8714270
.003	.090	.003968	3.5985717	.06299	.001368	3.1363245
.004	.120	.006656	3.8232133	.08158	.002106	3.3235099
.005	.150	.008323	3.9202868	.09123	.003706	3.4689009
.006	.180	.009979	3.9990870	.09984	.005863	3.5686885
.007	.210	.011501	2.0607639	.10749	.004869	3.6874175
.008	.240	.013286	2.1234188	.11526	.005949	3.7745169
.009	.270	.014932	2.1741325	.12219	.007094	3.8508759
.010	.300	.016584	2.2196989	.12878	.008306	3.9194050
.011	.030	.018279	2.2609534	.13504	.009582	3.9814222
.02	.060	.033025	2.5188527	.18172	.023431	2.3697954
.03	.090	.049301	2.6928557	.22203	.042715	2.6325838
.04	1.20	.065268	2.8147003	.25547	.065862	2.8186383
.05	1.50	.081295	2.9100678	.28186	.091756	2.9626356
.06	1.80	.097179	2.9875747	.31173	.11996	2.0790625
.07	2.10	.11282	1.0523957	.33589	.15105	1.1791207
.08	2.40	.12831	1.1082622	.35820	.18439	1.2647440
.09	2.70	.14363	1.1572641	.37899	.21882	1.3400969
.10	3.00	.15879	1.2008485	.39849	.25546	1.4073378
.11	3.30	.17380	1.2400610	.41689	.29378	1.4680333
.12	3.60	.18864	1.2756430	.43433	.33365	1.5232992
.13	3.90	.20332	1.3081892	.45091	.37499	1.5740240
.14	4.20	.21784	1.3381391	.46673	.41770	1.6208710
.15	4.50	.23219	1.3658529	.48186	.46171	1.6643775
.16	4.80	.24638	1.3916076	.49636	.50695	1.7049651
.17	5.10	.26040	1.4156494	.51029	.55335	1.7429999
.18	5.40	.27426	1.4381655	.52370	.60084	1.7787615
.19	5.70	.28795	1.4593209	.53661	.64937	1.8124955
.20	6.00	.30078	1.4782549	.54843	.69890	1.8444153
.21	6.30	.31483	1.4980800	.56109	.74936	1.8746921
.22	6.60	.32802	1.5159037	.57273	.80071	1.9034766
.23	6.90	.34104	1.5328054	.58401	.85092	1.9298914
.24	7.20	.35213	1.5588653	.60177	.90588	1.9570733
.25	7.50	.36556	1.5641480	.60544	.95972	1.9821468
.26	7.80	.37906	1.5787165	.61568	1.01414	0.0060995
.27	8.10	.39140	1.5926236	.62550	1.06682	0.0281045
.28	8.40	.40355	1.6059080	.63526	1.12512	0.0512008
.29	8.70	.41553	1.6186076	.64462	1.18155	0.0724521
.30	9.00	.42735	1.6307850	.65372	1.23855	0.0929135
.31	9.30	.43999	1.6434524	.66332	1.29610	0.1126385
.32	9.60	.45044	1.6536381	.67114	1.35416	0.1316708
.33	9.90	.46171	1.6643748	.67949	1.41890	0.1509538
.34	10.20	.47281	1.6746873	.68761	1.47170	0.1678212
.35	10.50	.48372	1.6846014	.69550	1.52760	0.1840106
.36	10.80	.49446	1.6941371	.70318	1.59094	0.2016548
.37	11.10	.50501	1.7033058	.71064	1.68957	0.2277783
.38	11.40	.51538	1.7121315	.71790	1.71166	0.2334182
.39	11.70	.52556	1.7206294	.72496	1.77245	0.2485755
.40	12.00	.53557	1.7288223	.73183	1.83359	0.2632957
.41	12.30	.54537	1.7366952	.73849	1.89491	0.2775906
.42	12.60	.55499	1.7442912	.74498	1.95651	0.2914826
.43	12.90	.56442	1.7516082	.75128	2.02295	0.3049857
.44	13.20	.57366	1.7586603	.75740	2.08026	0.3181194
.45	13.50	.58271	1.7654563	.76335	2.14239	0.3298993
.46	13.80	.59145	1.7719212	.76906	2.20463	0.3433372
.47	14.10	.60026	1.7783461	.77477	2.26698	0.3554479
.48	14.40	.60868	1.7843898	.78019	2.32939	0.3672440
.49	14.70	.61694	1.7902438	.78545	2.39187	0.3787385
.50	15.00	.62500	1.7958800	.79056	2.45436	0.3889398

TABLE XVIII.—*continued.*

Depth on In- vert \div by Diameter.	Depth on In- vert in Ins.	Hydra- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. A.)
.51	15.30	.63286	1.8013138	.79553	2.52324	0.4008594
.52	15.60	.64050	1.8065243	.80031	2.57933	0.4115081
.53	15.90	.64790	1.8115116	.80492	2.63568	0.4208927
.54	16.20	.65530	1.8164402	.80950	2.70410	0.4320227
.55	16.50	.66067	1.8199888	.81282	2.76631	0.4419012
.56	16.80	.66902	1.8254453	.81794	2.82846	0.4515514
.57	17.10	.67562	1.8297079	.82196	2.89043	0.4609636
.58	17.40	.68200	1.8337900	.82583	2.95222	0.4701494
.59	17.70	.68842	1.8378540	.82971	3.01381	0.4791171
.60	18.00	.69413	1.8414427	.83314	3.07517	0.4878698
.61	18.30	.69982	1.8449889	.83655	3.13628	0.4964151
.62	18.60	.70556	1.8485343	.83997	3.19710	0.5047571
.63	18.90	.71056	1.8516025	.84294	3.25761	0.5129002
.64	19.20	.71558	1.8546604	.84592	3.31779	0.5208493
.65	19.50	.72038	1.8575633	.84875	3.37761	0.5286098
.66	19.80	.72491	1.8602847	.85141	3.43703	0.5361835
.67	20.10	.72920	1.8628505	.85393	3.49602	0.5435745
.68	20.40	.73323	1.8652452	.85629	3.55457	0.5507876
.69	20.70	.73705	1.8675014	.85852	3.61263	0.5578244
.70	21.00	.74058	1.8695757	.86057	3.67018	0.5646882
.71	21.30	.74385	1.8714911	.86247	3.72718	0.5713812
.72	21.60	.74686	1.8732424	.86421	3.77491	0.5769067
.73	21.90	.74959	1.8748282	.86579	3.83942	0.5824662
.74	22.20	.75205	1.8762472	.86720	3.89459	0.5904622
.75	22.50	.75422	1.8775008	.86846	3.94907	0.5964954
.76	22.80	.75609	1.8785735	.86953	4.00283	0.6023672
.77	23.10	.75766	1.8794758	.87043	4.05584	0.6080799
.78	23.40	.75893	1.8802047	.87116	4.10802	0.6136330
.79	23.70	.75987	1.8807408	.87170	4.15625	0.6187016
.80	24.00	.76047	1.8810865	.87205	4.20983	0.6242653
.81	24.30	.76075	1.8812459	.87221	4.25936	0.6293446
.82	24.60	.76067	1.8812005	.87216	4.29799	0.6332650
.83	24.90	.76023	1.8809450	.87191	4.35538	0.6390267
.84	25.20	.75940	1.8804735	.87143	4.40178	0.6436291
.85	25.50	.75816	1.8797648	.87072	4.44704	0.6480712
.86	25.80	.75651	1.8788157	.87977	4.49103	0.6523461
.87	26.10	.75440	1.8776064	.86856	4.53374	0.6564570
.88	26.40	.75182	1.8761167	.86708	4.57508	0.6603998
.89	26.70	.74873	1.8743281	.86529	4.61495	0.6641670
.90	27.00	.74509	1.8722096	.86318	4.65327	0.6677582
.91	27.30	.74084	1.8697255	.86072	4.68991	0.6711648
.92	27.60	.73592	1.8668319	.85785	4.72476	0.6743805
.93	27.90	.73025	1.8634731	.85454	4.75768	0.6773959
.94	28.20	.72370	1.8595610	.85070	4.78849	0.6801989
.95	28.50	.71625	1.8550693	.84632	4.81698	0.6827749
.96	28.80	.70727	1.8495905	.84099	4.84287	0.6851032
.97	29.10	.69675	1.8430792	.83471	4.86582	0.6871565
.98	29.40	.68378	1.8349200	.82691	4.88530	0.6888918
.989	29.670	.66695	1.8240996	.81667	4.89915	0.6901213
.990	29.700	.66637	1.8237165	.81631	4.90043	0.6902343
.991	29.730	.66428	1.8223545	.81503	4.90162	0.6903401
.992	29.760	.66198	1.8208493	.81362	4.90278	0.6904431
.993	29.790	.66011	1.8196178	.81247	4.90386	0.6905388
.994	29.820	.65693	1.8175222	.81051	4.90486	0.6906274
.995	29.850	.65408	1.8156324	.80875	4.90579	0.6907093
.996	29.880	.65095	1.8135534	.80682	4.90663	0.6907834
.997	29.910	.64740	1.8111792	.80461	4.90736	0.6908487
.998	29.940	.64322	1.8083623	.80201	4.90799	0.6909040
.999	29.970	.62563	1.7963182	.79096	4.90847	0.6909465
1.000	30.000	.62500	1.7958800	.79056	4.90873	0.6909694

TABLE XIX.—PIPE THIRTY-THREE INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in Ina.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
001	0033	001825	3.2611736	04271	000317	4.5019147
002	0066	003657	3.5631843	06047	000899	4.9542124
003	0099	004365	3.6399644	06606	001656	3.2191095
004	0132	007322	3.8646060	08556	002548	3.4062953
005	0165	009155	3.9616595	09568	003562	3.5516863
006	0198	010976	2.0404797	10477	004674	3.6696539
007	0231	012651	2.1021566	11248	004679	3.6702029
008	0264	014615	2.1648115	12089	007199	3.8573023
009	0297	016425	2.2155252	12816	008584	3.9336613
010	0330	018243	2.2611016	13506	010051	2.0021904
011	0363	020060	2.3023461	14163	011593	2.0642076
02	066	036328	2.5602454	19059	028351	2.4525808
03	099	054231	2.7342484	23287	051924	2.7153692
04	132	071794	2.8560930	26794	079693	2.9014237
05	165	089425	2.9514605	29904	11102	1.0454210
06	198	10689	1.0289674	32695	14509	1.1618479
07	231	12410	1.0937913	35228	18277	1.2619061
08	264	14114	1.1496549	37568	22260	1.3475294
09	297	15799	1.1986568	39749	26477	1.4428823
10	330	17467	1.2422412	41794	30911	1.4901232
11	363	19118	1.2814537	43724	35548	1.5508187
12	396	20750	1.3170357	45553	40372	1.6060846
13	429	22365	1.3495819	47292	45374	1.6568094
14	462	23962	1.3795318	48951	50542	1.7036564
15	495	25541	1.4072456	50538	55867	1.7471629
16	528	27101	1.4336003	52059	61340	1.7877505
17	561	28644	1.4570421	53520	66955	1.8257853
18	594	30168	1.4795582	54926	72702	1.8615469
19	627	31674	1.5007136	56280	78574	1.8952809
20	660	33086	1.5196476	57520	84566	1.9272007
21	693	34631	1.5394727	58848	90672	1.9574775
22	726	36082	1.5572964	60068	96886	1.9862620
23	759	37428	1.5741981	61249	102961	0.0126768
24	792	38927	1.5902580	62392	109612	0.0398587
25	825	40321	1.6055407	63499	116126	0.0649322
26	858	41697	1.6201092	64573	122711	0.0888849
27	891	43054	1.6340163	65615	129089	0.1108899
28	924	44391	1.6473007	66627	136140	0.1339862
29	957	45719	1.6601003	67616	142967	0.1552375
30	990	47008	1.6721777	68562	149864	0.1756989
31	1023	48399	1.6848451	69570	156829	0.1954239
32	1056	49548	1.6950308	70390	163853	0.2144562
33	1089	50788	1.7057675	71266	170938	0.2328392
34	1122	52009	1.7160800	72117	178076	0.2506066
35	1155	53210	1.7259941	72945	184840	0.2667960
36	1188	54391	1.7355298	73750	192504	0.2844402
37	1221	55551	1.7446985	74533	199785	0.3005637
38	1254	56692	1.7535242	75641	207111	0.3162036
39	1287	57812	1.7620221	76034	214467	0.3313609
40	1320	58913	1.7702150	76755	221861	0.3460811
41	1353	59991	1.7780879	77455	229285	0.3603760
42	1386	61049	1.7856839	78134	236737	0.3742680
43	1419	62087	1.7930009	78795	244777	0.3877711
44	1452	63103	1.8000530	79437	251712	0.4009048
45	1485	64098	1.8068490	80061	258633	0.4126847
46	1518	65059	1.8133139	80659	266761	0.4261226
47	1551	66029	1.8197388	81258	274304	0.4382333
48	1584	66954	1.8257825	81825	281857	0.4500294
49	1617	67863	1.8316365	82379	289416	0.4615239
50	1650	68750	1.8372727	82915	296978	0.4717252

TABLE XIX.—*continued.*

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
·51	16·83	·69615	I·8427065	·83435	3·04540	0·4836448
·52	17·16	·70455	I·8479170	·83937	3·12099	0·4942935
·53	17·49	·71269	I·8529043	·84421	3·18917	0·5036781
·54	17·82	·72066	I·8578329	·84901	3·27196	0·5148081
·55	18·15	·72674	I·8613815	·85249	3·34723	0·5246866
·56	18·48	·73593	I·8668380	·85786	3·42244	0·5343368
·57	18·81	·74319	I·8711006	·86208	3·49742	0·5437490
·58	19·14	·75020	I·8751827	·86614	3·57219	0·5529348
·59	19·47	·75726	I·8792467	·87020	3·64672	0·5619025
·60	19·80	·76354	I·8828354	·87381	3·72096	0·5706552
·61	20·13	·76980	I·8863816	·87738	3·79490	0·5792005
·62	20·46	·77611	I·8899270	·88097	3·86849	0·5875425
·63	20·79	·78161	I·8929952	·88409	3·94171	0·5956856
·64	21·12	·78714	I·8960531	·88721	4·01453	0·6036347
·65	21·45	·79242	I·8989560	·88018	4·08691	0·6113952
·66	21·78	·79740	I·9016774	·89297	4·15880	0·6189689
·67	22·11	·80212	I·9042432	·89561	4·23019	0·6263599
·68	22·44	·80656	I·9066379	·89808	4·30103	0·6335730
·69	22·77	·81076	I·9088941	·90042	4·37129	0·6406098
·70	23·10	·81464	I·9109634	·90257	4·44092	0·6474736
·71	23·43	·81824	I·9128838	·90456	4·50989	0·6541666
·72	23·76	·82155	I·9146351	·90639	4·56764	0·6596921
·73	24·09	·82455	I·9162209	·90805	4·64570	0·6670516
·74	24·42	·82725	I·9176399	·90953	4·71246	0·6732476
·75	24·75	·82964	I·9188935	·91084	4·77838	0·6792808
·76	25·08	·83169	I·9199662	·91197	4·84332	0·6851526
·77	25·41	·83342	I·9208685	·91292	4·90755	0·6908653
·78	25·74	·83482	I·9215974	·91368	4·97070	0·6964184
·79	26·07	·83586	I·9221335	·91425	5·02906	0·7014870
·80	26·40	·83652	I·9224792	·91461	5·09390	0·7070507
·81	26·73	·83683	I·9226386	·91478	5·15382	0·7121300
·82	27·06	·83674	I·9225932	·91473	5·21255	0·7170504
·83	27·39	·83625	I·9223377	·91446	5·27001	0·7218121
·84	27·72	·83534	I·9218662	·91397	5·32616	0·7264145
·85	28·05	·83398	I·9211575	·91301	5·38092	0·7308566
·86	28·38	·83216	I·9202084	·91222	5·43414	0·7351315
·87	28·71	·82984	I·9189991	·91096	5·48570	0·7392424
·88	29·04	·82701	I·9175114	·90940	5·53584	0·7431842
·89	29·37	·82360	I·9157208	·90752	5·58409	0·7469524
·90	29·70	·81960	I·9136023	·90506	5·63045	0·7505436
·91	30·03	·81492	I·9111182	·90273	5·67479	0·7539502
·92	30·36	·80951	I·9082246	·90072	5·71697	0·7571659
·93	30·69	·80327	I·9048658	·89625	5·75680	0·7601813
·94	31·02	·79607	I·9009537	·89223	5·79407	0·7629843
·95	31·35	·78788	I·8964620	·88762	5·82854	0·7655603
·96	31·68	·77800	I·8909832	·88204	5·85987	0·7678886
·97	32·01	·76642	I·8844719	·87545	5·88763	0·7699419
·98	32·34	·75216	I·8763127	·86727	5·91122	0·7716772
·989	32·571	·73365	I·8654923	·85653	5·92798	0·7729067
·990	32·670	·73300	I·8651092	·85615	5·92952	0·7730197
·991	32·703	·73071	I·8637472	·85481	5·93096	0·7731255
·992	32·736	·72818	I·8622420	·85333	5·93237	0·7732285
·993	32·769	·72596	I·8609105	·85203	5·93367	0·7733242
·994	32·802	·72262	I·8589149	·85007	5·93489	0·7734128
·995	32·835	·71949	I·8570252	·84822	5·93601	0·7734947
·996	32·868	·71605	I·8549461	·84620	5·93702	0·7735688
·997	32·901	·71215	I·8525719	·84388	5·93791	0·7736341
·998	32·934	·70754	I·8497550	·84115	5·93867	0·7736894
·999	32·967	·68819	I·8377109	·82957	5·93925	0·7737319
1·000	33·000	·68750	I·8372727	·82915	5·93956	0·7737548

TABLE XX.—PIPE THIRTY-SIX INCHES IN DIAMETER.

Depth on In- vert + by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.001	.036	.001990	3.2989690	.04161	.000378	4.5774918
.002	.072	.003990	3.6009792	.06316	.001071	3.0297895
.003	.108	.004761	3.6777567	.06900	.001971	3.2946836
.004	.144	.007987	3.9024032	.08937	.003033	3.4818724
.005	.180	.009987	3.9994501	.09993	.004339	3.6272634
.006	.216	.011811	2.0782712	.10940	.005571	3.7459331
.007	.252	.013802	2.1399493	.11748	.007011	3.8457800
.008	.288	.016018	2.2026040	.12627	.008568	3.9328794
.009	.324	.017919	2.2533138	.13386	.010115	2.0092384
.010	.360	.019902	2.2988903	.14107	.011961	2.0777675
.011	.396	.021884	2.3401381	.14793	.013797	2.1397847
.02	.72	.039631	2.5980343	.19907	.033741	2.5281579
.03	1.08	.059161	2.7720389	.24323	.061794	2.7909463
.04	1.44	.078322	2.8938826	.27986	.094842	2.9770007
.05	1.80	.097555	2.9892499	.31234	.132129	1.1209981
.06	2.16	.11661	1.0667568	.34149	.173151	1.2384250
.07	2.52	.13539	1.1315804	.36795	.217512	1.3374832
.08	2.88	.15397	1.1874436	.39239	.264915	1.4231065
.09	3.24	.17236	1.2364460	.41517	.315108	1.4984594
.10	3.60	.19056	1.2800299	.43653	.367875	1.5657003
.11	3.96	.20856	1.3192427	.45674	.423054	1.6263958
.12	4.32	.22637	1.3548247	.47578	.480465	1.6816617
.13	4.68	.24399	1.3873706	.49395	.539991	1.7323865
.14	5.04	.26141	1.4173205	.51128	.601497	1.7792335
.15	5.40	.27863	1.4450343	.52786	.664875	1.8227400
.16	5.76	.29565	1.4707890	.54373	.730008	1.8633276
.17	6.12	.31249	1.4948339	.55900	.796824	1.9013624
.18	6.48	.32912	1.5173507	.57369	.865115	1.9371240
.19	6.84	.34555	1.5385048	.58783	.935100	1.9708580
.20	7.20	.36177	1.5584387	.60147	1.006416	0.0027775
.21	7.56	.37780	1.5772658	.61466	1.079082	0.0330546
.22	7.96	.39453	1.5950858	.62740	1.153026	0.0618391
.23	8.28	.40925	1.6119869	.63973	1.228185	0.0892638
.24	8.64	.42466	1.6280482	.65166	1.304505	0.1154458
.25	9.00	.43988	1.6433311	.66323	1.381914	0.1404810
.26	9.36	.45488	1.6578999	.67445	1.460367	0.1644620
.27	9.72	.46968	1.6718049	.68533	1.539810	0.1874671
.28	10.08	.48427	1.6850904	.69590	1.620180	0.2095633
.29	10.44	.49865	1.6977992	.70615	1.701432	0.2308146
.30	10.80	.51284	1.7099872	.71613	1.783512	0.2512760
.31	11.16	.52678	1.7216338	.72580	1.866384	0.2710010
.32	11.52	.54052	1.7328171	.73520	1.949994	0.2900333
.33	11.88	.55406	1.7435563	.74435	2.034306	0.3084163
.34	12.24	.56737	1.7538689	.75324	2.119257	0.3261836
.35	12.60	.58047	1.7637828	.76189	2.204820	0.3433731
.36	12.96	.59336	1.7733184	.77030	2.290959	0.3600173
.37	13.32	.60602	1.7824872	.77847	2.377611	0.3761408
.38	13.68	.61846	1.7913128	.78642	2.460749	0.3917727
.39	14.04	.63068	1.7998108	.79415	2.552337	0.4069380
.40	14.40	.64249	1.8080043	.80168	2.640330	0.4359530
.41	14.76	.65445	1.8158766	.80898	2.728683	0.4389530
.42	15.12	.66600	1.8234726	.81608	2.817378	0.4498451
.43	15.48	.67731	1.8307896	.82280	2.906352	0.4633482
.44	15.84	.68840	1.8378416	.82970	2.995587	0.4764819
.45	16.20	.69924	1.8446378	.83621	3.085047	0.4892618
.46	16.56	.70974	1.8511037	.84246	3.174678	0.5016997
.47	16.92	.72032	1.8575275	.84872	3.264723	0.5138104
.48	17.28	.73042	1.8635712	.85464	3.354336	0.5256065
.49	17.64	.74033	1.8694253	.86042	3.444300	0.5371010
.50	18.00	.75000	1.8750613	.86602	3.534292	0.5483024

TABLE XX.—*continued.*

Depth on In- vert ÷ by Diameter.	Depth on In- vert in Ins.	Hydrau- lic Mean Depth. R in Feet.	log. (R.)	\sqrt{R} in Feet.	Area of Cross Section in Square Feet.	log. (A.)
.51	18.36	.75944	I.8804952	.87146	3.624232	0.5592230
.52	18.72	.76861	I.8857057	.87670	3.714246	0.5698706
.53	19.08	.77749	I.8906937	.88175	3.804129	0.5802552
.54	19.44	.78636	I.8956216	.88677	3.893904	0.5903852
.55	19.80	.79466	I.9001801	.89143	3.983535	0.6002686
.56	20.16	.80283	I.9046268	.89601	4.072995	0.6099139
.57	20.52	.81075	I.9088893	.90042	4.162230	0.6193261
.58	20.88	.81841	I.9129714	.90466	4.251204	0.6285119
.59	21.24	.82580	I.9168782	.90874	4.339899	0.6374796
.60	21.60	.83298	I.9206341	.91267	4.428252	0.6462323
.61	21.96	.83979	I.9241704	.91640	4.516245	0.6547776
.62	22.32	.84637	I.9275618	.91998	4.603833	0.6631196
.63	22.68	.85267	I.9307849	.92340	4.690971	0.6712627
.64	23.04	.85870	I.9338416	.92666	4.777623	0.6792118
.65	23.40	.86444	I.9367365	.92975	4.863762	0.6869723
.66	23.76	.86989	I.9394660	.93268	4.949325	0.6945450
.67	24.12	.87503	I.9420319	.93544	5.034276	0.7019370
.68	24.48	.87988	I.9444267	.93802	5.118588	0.7091501
.69	24.84	.88445	I.9466761	.94045	5.202198	0.7161869
.70	25.20	.88870	I.9487571	.94271	5.285070	0.7230507
.71	25.56	.89263	I.9506724	.94479	5.367150	0.7297437
.72	25.92	.89624	I.9524238	.94670	5.448402	0.7362692
.73	26.28	.89952	I.9540096	.94843	5.518772	0.7426287
.74	26.64	.90246	I.9554287	.94998	5.608115	0.7488247
.75	27.00	.90506	I.9566781	.95134	5.686668	0.7548579
.76	27.36	.90731	I.9577548	.95252	5.764077	0.7607297
.77	27.72	.90919	I.9586571	.95351	5.840397	0.7664424
.78	28.08	.91070	I.9593796	.95431	5.915556	0.7719955
.79	28.44	.91184	I.9599195	.95490	5.989500	0.7773906
.80	28.80	.91257	I.9602679	.95528	6.062166	0.7826252
.81	29.16	.91292	I.9604272	.95546	6.133482	0.7877071
.82	29.52	.91281	I.9603818	.95541	6.203367	0.7926275
.83	29.88	.91227	I.9601263	.95513	6.271758	0.7973892
.84	30.24	.91128	I.9596522	.95461	6.338574	0.8019916
.85	30.60	.90980	I.9589462	.95383	6.403707	0.8064314
.86	30.96	.90781	I.9579971	.95279	6.467085	0.8107086
.87	31.32	.90529	I.9567878	.95146	6.528591	0.8148195
.88	31.68	.90219	I.9553000	.94984	6.588117	0.8187613
.89	32.04	.89848	I.9535104	.94788	6.645528	0.8225295
.90	32.40	.89411	I.9513910	.94557	6.700707	0.8261207
.91	32.76	.88901	I.9489069	.94287	6.753074	0.8295273
.92	33.12	.88311	I.9460133	.93973	6.792667	0.8327430
.93	33.48	.87630	I.9426518	.93610	6.851070	0.8357584
.94	33.84	.86844	I.9387423	.93190	6.895431	0.8385614
.95	34.20	.85949	I.9342439	.92709	6.936453	0.8411374
.96	34.56	.85069	I.9297720	.92233	6.973740	0.8434657
.97	34.92	.83610	I.9222606	.91439	7.006788	0.8455190
.98	35.28	.82054	I.9141014	.90584	7.034841	0.8472543
.989	35.60	.80220	I.9042810	.89565	7.054785	0.8484838
.990	35.64	.79764	I.9028982	.89423	7.056621	0.8485968
.991	35.67	.79713	I.9015299	.89282	7.058367	0.8487043
.992	35.71	.79448	I.9000307	.89128	7.060014	0.8488056
.993	35.74	.79194	I.8986916	.88990	7.061571	0.8489013
.994	35.78	.78832	I.8967036	.88787	7.063011	0.8489899
.995	35.82	.78488	I.8948039	.88593	7.064353	0.8490718
.996	35.85	.78115	I.8927348	.88382	7.065549	0.8491457
.997	35.89	.77689	I.8903617	.88141	7.066711	0.8492112
.998	35.92	.77187	I.8875437	.87856	7.067511	0.8492665
.999	35.96	.75075	I.8754943	.86645	7.068204	0.8493090
1.000	36.00	.75000	I.8750613	.86602	7.068583	0.8493324

TABLE XXI.—GIVING THE VALUES OF R, LOG. R, \sqrt{R} , A, AND LOG. A FOR CIRCULAR PIPES, CONDUITS AND SEWERS, FLOWING FULL; WHEN HALF FULL REDUCE (A) BY ONE HALF.

Diameter. Feet. Inches.	(R) in Feet.	log. (R.)	\sqrt{R} in Feet.	A = Area in Square Feet.	log. (A.)
$\frac{3}{8}$	·0078	3·8927901	·088	·00077	4·8847901
$\frac{1}{2}$	·0104	2·0177288	·102	·00136	3·1346675
$\frac{3}{4}$	·0156	2·1938201	·125	·00307	3·4868501
1	·0208	2·3187588	·144	·00545	3·7367275
$1\frac{1}{4}$	·0260	2·4156688	·161	·00852	3·9305475
$1\frac{1}{2}$	·0312	2·4948501	·177	·01227	2·0889101
$1\frac{3}{4}$	·0364	2·5617968	·191	·01670	2·2228035
2	·0417	2·6197887	·204	·02182	2·3387873
$2\frac{1}{4}$	·052	2·7166988	·228	·0341	2·5326075
$2\frac{1}{2}$	·063	2·7958800	·251	·0491	2·6909699
3	·084	2·9208187	·290	·0873	2·9408473
4	·104	3·0177288	·323	·136	3·1346675
5	·125	3·0969100	·354	·196	3·2930299
6	·146	3·1638568	·382	·267	3·4269235
7	·167	3·2218487	·408	·349	3·5429073
8	·187	3·2730013	·433	·442	3·6452125
9	·208	3·3187588	·456	·545	3·7367275
10	·229	3·3601515	·479	·660	3·8195129
11	·250	3·3979400	·5	·785	3·8950899
1 0	·271	3·4327022	·52	·922	3·9646143
1 1	·292	3·4648868	·54	1·069	4·0289835
1 2	·313	3·4948501	·559	1·227	4·0889101
1 3	·333	3·5228788	·577	1·396	4·1449675
1 4	·354	3·5492077	·595	1·576	4·1976253
1 5	·375	3·5740313	·612	1·767	4·2472725
1 6	·396	3·5975124	·629	1·969	4·2942347
1 7	·417	3·6197888	·646	2·182	4·3387875
1 8	·437	3·6409731	·661	2·405	4·3811661
1 9	·458	3·6611815	·677	2·640	4·4215729
2 0	·479	3·6804866	·692	2·885	4·4601831
2 1	·5	3·6989700	·707	3·142	4·4971499
2 2	·521	3·7166988	·722	3·409	4·5326075
2 3	·542	3·7337321	·736	3·687	4·5666741
2 4	·562	3·7501226	·75	3·976	4·5994551
2 5	·583	3·7659168	·764	4·276	4·6310435
2 6	·604	3·7811568	·777	4·587	4·6615235
2 7	·625	3·7958801	·79	4·909	4·6909701
2 8	·646	3·8101205	·804	5·241	4·7194509
2 9	·667	3·8239088	·817	5·585	4·7470275
3 0	·687	3·8372727	·829	5·939	4·7737553
3 1	·708	3·8502377	·842	6·305	4·7996853
3 2	·729	3·8628268	·854	6·681	4·8248635
3 3	·75	3·8750613	·866	7·068	4·8493325
3 4	·771	3·8869605	·878	7·466	4·8731309
3 5	·792	3·8985424	·89	7·875	4·8962947
3 6	·812	3·9098234	·901	8·295	4·9188567
3 7	·833	3·9208188	·913	8·726	4·9408475
3 8	·854	3·9315427	·924	9·169	4·9622953
3 9	·875	3·9420080	·935	9·621	4·9832259
4 0	·896	3·9522273	·946	10·084	5·0036645
4 1	·917	3·9622115	·957	10·559	5·0236329
4 2	·937	3·9719713	·968	11·044	5·0431525
4 3	·958	3·9815166	·979	11·541	5·0622431
4 4	·979	3·9908567	·99	12·048	5·0809233
4 5	1·	4·0000000	1·	12·566	5·0992099
4 6	1·021	4·0089549	1·01	13·096	5·1171197
4 7	1·042	4·0177288	1·021	13·635	5·1346675
4 8	1·062	4·0263290	1·031	14·186	5·1518679
4 9	1·083	4·0347621	1·041	14·748	5·1687341
5 0	1·104	4·0430347	1·051	15·321	5·1852793
5 1	1·125	4·0511525	1·061	15·904	5·2015149

TABLE XXI.—GIVING THE VALUES OF R, LOG. R, \sqrt{R} , A, AND LOG. A FOR CIRCULAR PIPES, CONDUITS AND SEWERS, FLOWING FULL; WHEN HALF FULL REDUCE (A) BY ONE HALF.

Diameter. Feet. Inches.	(R) in Feet.	log. (R).	\sqrt{R} in Feet.	A = Area in Square Feet.	log. (A).
4 7	1.146	0.0591215	1.070	16.499	1.2174529
4 8	1.167	0.0669468	1.080	17.104	1.2331035
4 9	1.187	0.0746337	1.089	17.721	1.2484773
4 10	1.208	0.0821868	1.099	18.348	1.2635835
4 11	1.229	0.0896105	1.109	18.986	1.2784315
5 0	1.25	0.0969100	1.118	19.635	1.2930299
5 1	1.271	0.1040886	1.127	20.295	1.3073871
5 2	1.292	0.1111505	1.137	20.966	1.3215109
5 3	1.312	0.1181093	1.146	21.648	1.3354285
5 4	1.333	0.1249388	1.155	22.340	1.3490875
5 5	1.354	0.1316722	1.164	23.044	1.3625543
5 6	1.375	0.1383027	1.173	23.758	1.3758153
5 7	1.396	0.1448336	1.181	24.484	1.3888771
5 8	1.417	0.1512677	1.190	25.220	1.4017453
5 9	1.437	0.1576079	1.199	25.967	1.4144257
5 10	1.558	0.1638568	1.208	26.725	1.4269235
5 11	1.479	0.1700171	1.216	27.494	1.4392441
6 0	1.5	0.1760913	1.225	28.274	1.4513925
6 3	1.562	0.1938201	1.250	30.680	1.4868501
6 6	1.625	0.2108534	1.275	33.183	1.5209167
6 9	1.687	0.2272438	1.299	35.785	1.5536975
7 0	1.75	0.2430380	1.323	38.485	1.5852859
7 3	1.812	0.2582780	1.346	41.283	1.6157659
7 6	1.879	0.2730013	1.369	44.179	1.6452125
7 9	1.937	0.2872417	1.392	47.173	1.6736933
8 0	2	0.3010300	1.414	50.266	1.7012699
8 3	2.062	0.3143939	1.436	53.456	1.7279977
8 6	2.125	0.3273589	1.458	56.745	1.7539277
8 9	2.187	0.3399481	1.479	60.132	1.7791061
9 0	2.25	0.3521825	1.500	63.617	1.8035749
9 3	2.312	0.3640817	1.521	67.201	1.8273733
9 6	2.375	0.3756636	1.541	70.882	1.8505371
9 9	2.437	0.3869446	1.561	74.662	1.8730991
10 0	2.5	0.3979400	1.581	78.540	1.8950899
10 3	2.562	0.4086639	1.601	82.516	1.9165377
10 6	2.625	0.4191293	1.620	86.590	1.9374685
10 9	2.687	0.4293485	1.639	90.763	1.9579069
11 0	2.750	0.4393327	1.658	95.033	1.9778753
11 3	2.812	0.4490925	1.677	99.402	1.9973949
11 6	2.875	0.4586378	1.696	103.869	2.0164855
11 9	2.937	0.4679779	1.714	108.434	2.0351657
12 0	3	0.4771212	1.732	113.098	2.0534523
12 3	3.062	0.4860761	1.750	117.859	2.0713621
12 6	3.125	0.4948500	1.768	122.719	2.0889099
12 9	3.187	0.5034502	1.785	127.677	2.1061103
13 0	3.25	0.5118834	1.803	132.733	2.1229767
13 3	3.312	0.5201559	1.820	137.887	2.1395217
13 6	3.375	0.5282738	1.837	143.139	2.1557575
13 9	3.437	0.5362427	1.854	148.490	2.1716953
14 0	3.5	0.5440680	1.871	153.938	2.1873459
14 6	3.625	0.5593080	1.904	165.130	2.2178259
15 0	3.75	0.5740313	1.936	176.715	2.2472725
15 6	3.875	0.5882717	1.968	188.692	2.2757533
16 0	4	0.6020600	2	201.062	2.3033299
16 6	4.125	0.6154239	2.031	213.825	2.3300577
17 0	4.250	0.6283889	2.061	226.981	2.3559877
17 6	4.375	0.6409780	2.091	240.529	2.3811659
18 0	4.5	0.6532125	2.121	254.470	2.4056349
19 0	4.75	0.6766936	2.180	283.529	2.4525971
20 0	5	0.6989700	2.236	314.159	2.4971499

TABLE XXII.—AREA AND HYDRAULIC MEAN DEPTH OF EGG-SHAPED SEWERS. (OLD FORM.)

Dimensions of Sewer.			Flowing full.					Flowing two-thirds full.					Flowing one-third full.				
Width.	Height.		Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)
1	0	1	2897	1.4619485	5.3823	1.1485	0.0601310	3.157	1.4992746	5.6187	7.558	1.8784069	2.066	1.3151303	4.5453	2840	1.4533183
1	2	1	3380	1.5288933	5.8137	1.5632	0.1940246	3.683	1.5662214	6.0687	1.0287	0.0122905	2.410	1.3820771	4.9091	3.865	1.5872119
1	4	2	3863	1.5868873	6.2007	2.0418	0.3100086	4.209	1.6212134	6.4876	1.3436	0.1282845	2.755	1.4400691	5.2488	5.049	1.7031959
1	6	2	4345	1.6380398	6.5915	2.5841	0.4123136	4.735	1.6753659	6.8811	1.7005	0.2303895	3.099	1.4912216	5.5668	6.390	1.8055009
1	8	2	4828	1.6837973	6.9433	3.1903	0.5033286	5.262	1.7211282	7.2539	2.0994	0.3221045	3.443	1.5366791	5.8677	7.889	1.8970159
1	10	2	5311	1.7251900	7.2876	3.8602	0.5866140	5.788	1.7625161	7.6078	2.5402	0.4048899	3.786	1.5783718	6.1530	9.545	1.9798013
2	0	3	5794	1.7629785	7.6118	4.5940	0.6621910	6.314	1.8003046	7.9460	3.0232	0.4504669	4.132	1.6161603	6.4280	11.360	0.0553783
2	2	3	6277	1.7977406	7.9227	5.3916	0.7317152	6.840	1.8350667	8.2704	3.5130	0.5199911	4.476	1.6503224	6.6902	1.3332	0.1249025
2	4	3	6760	1.8299253	8.2219	6.2529	0.7960846	7.366	1.8672514	8.5825	4.1149	0.6143605	4.820	1.6831071	6.9426	1.5462	0.1892719
2	6	3	7242	1.8598885	8.5099	7.1781	0.8560110	7.892	1.8972146	8.8836	4.7237	0.6742869	5.165	1.7130703	7.1867	1.7750	0.2491983
2	8	4	7725	1.8879173	8.7891	8.1671	0.9120686	8.418	1.9252434	9.1749	5.3746	0.7303445	5.409	1.7410991	7.3545	2.0195	0.3032559
2	10	4	8208	1.9124462	9.0598	9.2199	0.9647264	8.944	1.9515723	9.4572	6.0674	0.7830023	5.852	1.7674280	7.6498	2.2799	0.3579137
3	0	4	8691	1.9390698	9.3225	10.3865	1.0143736	9.471	1.9763959	9.7319	6.8022	0.8326495	6.198	1.7922516	7.8727	2.5560	0.4075609
3	2	4	9174	1.9625509	9.5780	11.5169	1.0613358	9.997	1.9998770	9.9984	7.5790	0.8796117	6.542	1.8157327	8.0882	2.8479	0.4545231
3	4	5	9657	1.9848273	9.8270	12.7611	1.1058886	10.233	0.0021534	1.0258	8.3978	0.9241645	6.887	1.8380091	8.2987	3.1556	0.4990759
3	6	5	10139	0.050165	1.0039	14.0691	1.1482670	1.1049	0.0433426	1.0309	9.2585	0.9665429	7.231	1.8591983	8.5015	3.4790	0.5414543
3	8	5	10622	0.0262200	1.0294	15.4099	1.1886740	1.1576	0.0635461	1.0759	10.1613	1.0069499	7.575	1.8794018	8.7034	3.8182	0.5818613
3	10	5	11103	0.0455251	1.0538	16.8766	1.2272842	1.2102	0.0828612	1.1056	11.1061	1.0456601	7.920	1.8987069	8.8994	4.1732	0.6104715
4	0	6	11588	0.0640035	1.0752	18.3760	1.2642510	1.2628	0.1013346	1.1247	12.0928	1.0825269	8.264	1.9171903	9.0906	4.5440	0.6574383
4	2	6	12071	0.0817373	1.0986	19.9392	1.2997086	1.3154	0.1190631	1.1455	13.1215	1.1179845	8.608	1.9349191	9.2779	4.9306	0.6928959
4	4	6	12554	0.0987703	1.1204	21.5663	1.3337752	1.3506	0.1360967	1.1696	14.1922	1.1520511	8.952	1.9519524	9.4615	5.3229	0.7269625
4	6	6	13036	0.1151610	1.1404	23.2571	1.3665560	1.4206	0.1524871	1.1918	15.3049	1.1848319	9.297	1.9683428	9.6420	5.7501	0.7597493
4	8	7	13519	0.1309553	1.1627	25.0117	1.3981446	1.4737	0.1682984	1.2137	16.4536	1.2164205	9.641	1.9841371	9.8186	6.1849	0.7913319
4	10	7	14002	0.1461953	1.1833	26.8302	1.4286246	1.5258	0.1835214	1.2352	17.6563	1.2469005	9.986	1.9993771	9.9929	6.6346	0.8218119
5	0	7	14485	0.1609185	1.2023	28.7125	1.4580710	1.5785	0.1982446	1.2563	18.8950	1.2763469	1.0330	0.0141003	1.0163	7.1000	0.8512583

TABLE XXII.—*continued*.—AREA AND HYDRAULIC MEAN DEPTH OF EGG-SHAPED SEWERS (OLD FORM.)

Dimensions of Sewer.			Flowing full.					Flowing two-thirds full.					Flowing one-third full.				
Width. Ft.	Height. Ft.	Ins.	Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydrau- lic Mean Depth. Feet.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)
5	2	7	9	1.4968	0.1751590	30.6649	1.4865520	1.6311	0.2124851	1.2625	20.1757	1.3048279	1.0675	0.0289408	1.0331	7.5812	0.8797393
5	4	8	0	1.5461	0.1889473	32.6684	1.5141286	1.6836	0.2262734	1.2975	21.4933	1.3324045	1.1019	0.0421291	1.0485	8.0782	0.9073159
5	6	8	3	1.5983	0.2023112	34.7421	1.5208564	1.7363	0.2396373	1.3176	22.8629	1.3591323	1.1363	0.0554930	1.0660	8.5910	0.9340437
5	8	8	6	1.6416	0.2152762	36.8796	1.5667864	1.7890	0.2526023	1.3375	24.2686	1.3850623	1.1707	0.0684580	1.0819	9.1196	0.9599737
5	10	8	9	1.6899	0.2278653	39.0809	1.5919646	1.8415	0.2651914	1.3570	25.7182	1.4102405	1.2052	0.0810471	1.0965	9.6639	0.9851519
6	0	9	0	1.7382	0.2400998	41.3460	1.6164336	1.8942	0.2788767	1.3755	27.2088	1.4347095	1.2396	0.0932816	1.1133	10.2240	0.0096209
6	2	9	3	1.787	0.2519990	43.676	1.6402320	1.947	0.2893251	1.3953	28.742	1.4585079	1.274	0.1051808	1.1287	10.800	1.0334193
6	4	9	6	1.835	0.2635809	45.068	1.6633958	1.999	0.3009070	1.4138	30.317	1.4816717	1.309	0.1167627	1.1441	11.391	1.0565831
6	6	9	9	1.883	0.2748619	48.525	1.6853578	2.052	0.3121880	1.4324	31.933	1.5042337	1.343	0.1280437	1.1588	11.999	1.0791451
6	8	10	0	1.931	0.2858573	51.046	1.7079486	2.095	0.3241834	1.4474	33.592	1.5282245	1.377	0.1390391	1.1794	12.622	1.1011359
6	10	10	3	1.980	0.2965812	53.629	1.7293964	2.157	0.3339073	1.4686	35.292	1.5476723	1.412	0.1497630	1.1882	13.261	1.1225887
7	0	10	6	2.028	0.3070465	56.278	1.7503270	2.210	0.3443726	1.4866	37.035	1.5686029	1.446	0.1602283	1.2024	13.916	1.1435143
7	4	11	0	2.124	0.3272500	61.764	1.7907340	2.315	0.3645761	1.5215	40.646	1.6090099	1.515	0.1704318	1.2309	15.273	1.1839213
7	8	11	6	2.221	0.3465551	67.508	1.8293442	2.420	0.3838812	1.5592	44.426	1.6476201	1.584	0.1997369	1.2585	16.693	1.2325315
8	0	12	0	2.318	0.3650385	73.506	1.8663110	2.526	0.4023646	1.5993	48.372	1.6845869	1.653	0.2182203	1.2856	18.176	1.2594983
8	4	12	6	2.414	0.3827673	79.758	1.9017686	2.631	0.4200934	1.6220	52.487	1.7200445	1.722	0.2353491	1.3137	19.722	1.2949559
8	8	13	0	2.511	0.3998006	86.268	1.9353352	2.736	0.4371267	1.6540	56.771	1.7541111	1.791	0.2529824	1.3382	21.331	1.3290225
9	0	13	6	2.607	0.4161910	93.031	1.9586160	2.841	0.4535171	1.6855	61.222	1.7868919	1.859	0.2693728	1.3634	23.004	1.3618033
9	4	14	0	2.704	0.4319853	100.049	2.0002046	2.947	0.4693114	1.7166	65.840	1.8184805	1.928	0.2851671	1.3885	24.739	1.3933919
9	8	14	6	2.800	0.4472253	107.324	2.0306846	3.052	0.4845513	1.7469	70.628	1.8489605	1.997	0.3004071	1.4131	26.538	1.4238719
10	0	15	0	2.897	0.4619485	114.853	2.0601310	3.157	0.4992746	1.7767	75.582	1.8784069	2.066	0.3151303	1.4373	28.400	1.4533138
10	6	15	9	3.042	0.4831376	126.625	2.1025096	3.315	0.5204639	1.8207	83.390	1.9207855	2.169	0.3297865	1.4778	31.311	1.4956969
11	0	16	6	3.187	0.5035412	138.972	2.1429164	3.473	0.5406673	1.8635	91.455	1.9611923	2.273	0.3565290	1.5076	34.364	1.5361037
12	0	18	0	3.476	0.5411297	165.388	2.2181934	3.788	0.5784558	1.9462	108.838	2.0367693	2.479	0.3943115	1.5744	40.892	1.6116807

TABLE XXIII.—AREA AND HYDRAULIC MEAN DEPTH OF EGG-SHAPED SEWERS. (NEW FORM.)

Dimensions of Sewer.			Flowing full.					Flowing two-thirds full.					Flowing one-third full.				
Width.	Height.		Hydraulic Mean Depth.	log. (R.)	√R.	Sectional Area.	log. (A.)	Hydraulic Mean Depth.	log. (R.)	√R.	Sectional Area.	log. (A.)	Hydraulic Mean Depth.	log. (R.)	√R.	Sectional Area.	log. (A.)
Ft.	Ins.	Ft. Ins.	Feet.		Feet.	Square Feet.		Feet.		Feet.	Square Feet.		Feet.		Feet.	Square Feet.	
1	0	1	6	2844	I-4539502	53329	1-1150	3074	I-4877315	55443	7223	I-8587381	1920	I-2832211	43817	2543	I-4053105
1	1	2	1	3318	I-5208970	57602	1-5176	3586	I-5346783	59883	9331	I-9926317	2240	I-3501679	47328	3461	I-5592041
1	2	3	2	3792	I-5788890	61549	1-9822	4099	I-6126703	62903	1-2841	0-1086137	2580	I-4081599	50596	4521	I-6551881
1	4	2	3	4266	I-6300415	65007	2-5087	4611	I-6638228	67904	1-6252	0-2109207	2880	I-4593124	53665	5732	I-7574931
1	8	2	6	4740	I-6757990	68847	3-0972	5123	I-7099503	71575	2-0064	0-3024357	3200	I-5050699	56568	7064	I-8490081
1	10	2	9	5214	I-7171917	72208	3-7476	5636	I-7509730	75073	2-4277	0-3852211	3520	I-5464626	59329	8547	I-9317935
2	0	3	0	5698	I-7549802	75403	4-4600	6148	I-7887617	78409	2-8392	0-4607981	3840	I-5842511	61967	1-0172	0-0073705
2	2	3	3	6162	I-7897423	78498	5-2343	6660	I-8235236	81608	3-3908	0-5303223	4160	I-6190132	64498	1-1938	0-0763947
2	4	3	6	6636	I-8219270	81461	6-0705	7173	I-8557083	84693	3-9325	0-5946917	4480	I-6511979	66932	1-3845	0-1412641
2	6	3	9	7110	I-8518902	84320	6-9687	7685	I-8856715	87664	4-5144	0-6546181	4800	I-6811611	69282	1-5894	0-2011905
2	8	4	0	7584	I-8799190	87086	7-9288	8197	I-9133703	90537	5-1364	0-7106737	5120	I-7090899	71554	1-8084	0-2570481
2	10	4	3	8058	I-9062479	89766	8-9509	8710	I-9400292	93337	5-7985	0-7633335	5440	I-7355138	73756	2-0415	0-3099059
3	0	4	6	8532	I-9310715	92262	10-0349	9222	I-9648528	96031	6-5007	0-8129807	5760	I-7603424	75894	2-2887	0-3595331
3	2	4	9	9006	I-9545526	94999	11-1809	9734	I-9883339	98661	7-2431	0-8599429	6080	I-7838235	77902	2-5501	0-4065153
3	4	5	0	9480	I-9768290	97365	12-3888	1-0247	0-0156103	1-0122	8-0236	0-9144957	6400	I-8060999	80000	2-8236	0-4510681
3	6	5	3	9954	I-9980182	99769	13-6586	1-0759	0-0317995	1-5382	8-8482	0-9468741	6720	I-8272891	81975	3-1152	0-4934465
3	8	5	6	1-0428	0-0182217	1-0216	14-9904	1-1271	0-0520093	1-0316	9-7110	0-9872811	7040	I-8474926	83904	3-4190	0-5383835
3	10	5	9	1-0902	0-0375268	1-1784	16-3842	1-1784	0-0713081	1-0355	10-6139	1-0258913	7360	I-8667977	85790	3-7369	0-5724637
4	0	6	0	1-1376	0-0560102	1-0655	17-8399	1-2296	0-0897915	1-1307	11-5569	1-0628581	7680	I-8852811	87635	4-0689	0-6094305
4	2	6	3	1-1850	0-0773990	1-0877	19-3575	1-2808	0-1075203	1-1327	12-5400	1-0983157	8000	I-9030099	98648	4-4150	0-6448881
4	4	6	6	1-2324	0-0907723	1-1101	20-9371	1-3821	0-1245356	1-1541	13-5633	1-1323823	8320	I-9200432	91214	4-7753	0-6789547
4	6	6	9	1-2798	0-1071627	1-1312	22-5786	1-3883	0-1409440	1-1761	14-6267	1-1651631	8640	I-9364386	92951	5-1479	0-7117355
4	8	7	0	1-3272	0-1229570	1-1520	24-2820	1-4345	0-1567383	1-1977	15-7302	1-1967517	8960	I-9522279	94657	5-5382	0-7439241
4	10	7	3	1-3746	0-1381970	1-1734	26-0474	1-4858	0-1719738	1-2188	16-8738	1-2272317	9280	I-9674679	96332	5-9408	0-7738041
5	0	7	6	1-4220	0-1529202	1-1924	27-8748	1-4827	0-1867015	1-2397	18-0576	1-2566781	9600	I-9821911	97979	6-3576	0-8032505
5	2	7	9	1-4694	0-1671607	1-2115	29-7641	1-5882	0-2009420	1-2602	19-2815	1-2851591	9920	I-9964316	99599	6-7885	0-8317915
5	4	8	0	1-5168	0-1809490	1-2315	31-7153	1-5012863	0-2147303	1-2804	20-5455	1-3127357	1-0240	0-0102199	1-0129	7-2335	0-8593081
5	6	8	3	1-5642	0-1943129	1-2506	33-7285	1-6907	0-2280942	1-3004	21-8482	1-3394635	1-0560	0-0203588	1-0286	7-6927	0-8860359
5	8	8	6	1-6116	0-2072779	1-2694	35-8036	1-7419	0-2410592	1-3198	23-1940	1-3653935	1-0880	0-0365488	1-0430	8-1660	0-9119659
5	10	8	9	1-6590	0-2198670	1-2880	37-9407	1-7932	0-2536483	1-3391	24-5784	1-3903717	1-1200	0-0491379	1-0593	8-6594	0-9371441
6	0	9	0	1-7064	0-2321015	1-3072	40-1397	1-8444	0-2658828	1-3580	26-0029	1-4150407	1-1520	0-0613724	1-0757	9-1549	0-9616131

TABLE XXIV.—V-SHAPED FLUME, RIGHT-ANGLED CROSS SECTION.

Depth of Water in Feet.	R = Hydraulic Mean Depth in Feet.	log. (R.)	\sqrt{R} Feet.	A = Area in Square Feet.	log. (A.)	Depth of Water in Feet.	R = Hydraulic Mean Depth in Feet.	log. (R.)	\sqrt{R} Feet.	A = Area in Square Feet.	log. (A.)
.40	.141	I.1505150	.3755	.16	I.2041200	1.75	.618	I.7914930	.7861	3.06	0.4860760
.5	.177	I.2474950	.4207	.25	I.3979400	1.8	.636	I.8037275	.7974	3.24	0.5105450
.6	.212	I.3266163	.4604	.36	I.5563026	1.9	.672	I.8272086	.8197	3.61	0.5575072
.7	.247	I.3935530	.4969	.49	I.6901960	2.	.707	I.8494850	.8408	4.	0.6020600
.75	.265	I.4235163	.5147	.56	I.7501226	2.1	.743	I.8706743	.8619	4.41	0.6444386
.8	.283	I.4515450	.5319	.64	I.8061800	2.2	.778	I.8908777	.8820	4.84	0.6848454
.9	.318	I.5026975	.5639	.81	I.9084850	2.25	.795	I.9006375	.8916	5.06	0.7043656
1.	.354	I.5484550	.5949	1.	0.0000000	2.3	.813	I.9101828	.9016	5.29	0.7234556
1.1	.389	I.5898477	.6236	1.21	0.0827854	2.4	.849	I.9286662	.9214	5.76	0.7504224
1.2	.424	I.6276362	.6511	1.44	0.1583624	2.5	.884	I.9463950	.9402	6.25	0.7953800
1.25	.442	I.6453650	.6648	1.56	0.1938200	2.6	.919	I.9634283	.9586	6.76	0.8299466
1.3	.459	I.6623984	.6833	1.69	0.2278868	2.7	.955	I.9798188	.9772	7.29	0.8627276
1.4	.494	I.6945880	.7028	1.96	0.2922560	2.75	.972	I.9877877	.9859	7.56	0.8786654
1.5	.530	I.7245463	.7286	2.25	0.3521826	2.8	.990	I.9956130	.9949	7.84	0.8943160
1.6	.566	I.7525750	.7524	2.56	0.4082400	2.9	1.025	0.0108330	1.0124	8.41	0.9247960
1.7	.601	I.7789089	.7752	2.89	0.4608978	3.	1.061	0.0255763	1.0301	9.	0.9542426



PART II.

TABLES FOR THE SOLUTION

OF

GANGUILLET AND KUTTER'S FORMULA,

where

$$v = \frac{\frac{l}{n} + \left(a + \frac{m}{S}\right)}{\sqrt{R} + \left(a + \frac{m}{S}\right)^n} R \sqrt{S}$$

and $Q = Av$

FOR SPECIAL VALUES OF (n) NOT CONTEMPLATED
IN PART I.

TABLE XXV.—COLLECTION OF USEFUL QUANTITIES WITH LOGARITHMS.

CONSTANTS—GANGUILLET AND KUTTER'S FORMULA.		
	LENGTH.	Logarithm.
a	41·6604676	1·6197242
m	0·0028075	3·4483281
$l = \sqrt{3 \cdot 280899}$	1·811325 feet	0·2579964
π ratio of circumference of circle to its diameter	3·1415926536	0·4971499
1 foot	0·304794 metre	1·4840071
1 mile	1609·3123 metres	3·2066403
1 metre	3·280899 feet (English)	0·5159929
AREA.		
1 square foot	0·0928997 square metre	2·9680142
1 square metre	10·764300 square feet	1·0319858
VOLUME.		
1 cubic foot	0·0283153 cubic metre	2·4520213
	6·23210 British imperial gallons	0·7946344
1 British impl. gallon.....	0·16046 cubic foot	1·2053654
	0·0045435 cubic metre	3·6573868
1 cubic metre	35·316585 cubic feet	1·5479787
	220·0966 British imperial gallons.....	2·3426132
WATER.		
<i>Weights of Certain Measures.</i>		
1 cubic foot	62·425 pounds	1·7953553
	28·3153 kilograms	1·4520213
1 British impl. gallon ...	10·0165 pounds	1·0007208
	4·5435 kilograms	0·6573868
1 cubic metre	2204·672 pounds	3·3433340
<i>Measures of Certain Weights.</i>		
1 pound	0·016019 cubic foot	2·2046447
	0·099834 British imperial gallon	2·9992792
	0·00045359 metre	4·6566660
1 kilogram	0·0353166 cubic foot	2·5479787
	0·2200966 British imperial gallon	1·3426132
	0·001 cubic metre	3·0000000
<i>Velocity of—</i>		
g accelerating force of gravity (latitude of London)	32·19078 feet per second	1·5077315
2 <i>g</i> ditto, ditto	64·38156	1·8087615
g ditto, ditto, Paris	32·18255	1·5076204
2 <i>g</i> ditto, ditto	64·36510	1·8086504
g ditto, ditto, New York	32·15945	1·5073086
2 <i>g</i> ditto, ditto	64·31890	1·8083386
1 foot per second	0·681818 mile per hour	1·8336687
1 mile per hour	1·466666 feet per second	0·1663313
1 metre per second.....	3·280899 feet per second	0·5159929
<i>Discharge of—</i>		
1 cubic foot per second ...	0·0283153 cubic metre per second	1·4520213
	6·23210 British impl. gallons per second	0·7946346
1 B. impl. gallon per sec.	0·004534 cubic metre	3·6573868
	0·16046 cubic foot	1·2053654
1 cubic metre per sec. ...	35·316585 cubic feet	1·5479787
	220·0966 British impl. gallons	2·3426132

TABLE XXVI.—THE FOLLOWING TABLE, GIVING VALUES OF (n) FOR DIFFERENT SURFACES EXPOSED TO THE FLOW OF WATER, IS TAKEN FROM FLYNN. THE DIMENSIONS ARE IN FEET.

R = HYDRAULIC MEAN DEPTH IN FEET.

S = SINE OF SLOPE.

Series of Bazin.		R in feet.	S.	Breadth of water surface in feet.	Depth in feet.	n.
No.						
28	Carefully planed plank	0.07	0.0048922	0.328	0.14	0.0096
29	" " "	0.05	0.0152370	0.328	0.079	0.0087
24	In cement, semi-circular	0.82	0.0014243	3.28	1.47	0.01005
2	" rectangular	0.49	0.005060	5.9	0.59	0.01040
25	" with one-third sand, semi-circular	0.85	0.0013802	3.28	1.61	0.01113
26	Plank, semi-circular	0.91	0.0015227	3.6	1.61	0.01195
21	" trapezoidal	0.82	0.0015213	4.6	1.24	0.01255
22	" "	0.65	0.0048751	4.36	0.98	0.01190
23	" triangular, 45°	0.65	0.004655	4.36	1.87	0.0119
6	" rectangular	0.65	0.0022136	6.5	0.85	0.013
7	" "	0.52	0.004889	6.5	0.62	0.0119
8	" "	0.46	0.0081629	6.5	0.52	0.0115
9	" "	0.72	0.0014678	6.5	0.91	0.0129
10	" "	0.46	0.0058744	6.5	0.55	0.0117
11	" "	0.42	0.0083805	6.5	0.49	0.0114
18	" "	0.65	0.0045988	3.9	0.91	0.0114
19	" "	0.49	0.0042731	2.6	0.82	0.0114
20	" "	0.32	0.0059829	1.6	0.62	0.0114
RAMMED GRAVEL :—						
27	½ to ¾ inch thick, semi-circular	0.75	0.0013639	3.28	1.34	0.0163
4	" " " rectangular	0.65	0.0049736	6.0	0.85	0.0170
BATTENS PLACED :—						
12	¾-inch apart, rectangular	0.75	0.0014678	6.4	1.01	0.0149
13	" " "	0.55	0.0059664	6.4	0.65	0.0147
14	" " "	0.49	0.0088618	6.4	0.59	0.0149
15	2 inches " "	0.95	0.0014678	6.4	1.31	0.0208
16	" " "	0.69	0.0059976	6.4	0.88	0.0211
17	" " "	0.63	0.088618	6.4	0.78	0.0215
1.2	Ashlar, rectangular	1.77	0.0008400	8.5	3.0	0.0133
3	Brickwork, rectangular	0.55	0.050250	3.0	0.65	0.0129
39	Ashlar	0.59	0.0081	3.9	0.85	0.0129
RUBBLE :—						
32	Rather damaged, rectangular	0.52	0.10076	5.9	0.63	0.0167
33	" " " new, "	0.65	0.036856	5.9	0.88	0.0170
1.4	" " " "	0.63	0.060	3.28	0.95	0.0180
1.3	" " " "	0.72	0.029	3.28	1.18	0.0184
1.6	" " " "	0.82	0.014	3.28	1.54	0.0182
1.5	" " " "	0.88	0.0122	3.28	1.60	0.0192
44	With deposits on the bed, rect- angular	1.47	0.00032	6.56	2.62	0.0204
46	With deposits on the bed, rect- angular	1.31	0.00032	6.56	2.29	0.0210
35	Damaged rubble, trapezoidal...	1.21	0.014221	4.9	2.29	0.0220

TABLE XXVI.—*continued.*

Series of Bazin.		R in feet.	S	Breadth of water surface in feet.	Depth in feet.	n.
No.						
	OTHER OBSERVATIONS :—					
	Gotenbachschale, new rubble, semi-circular.....	0·32	0·044	5·5	0·59	0·0145
	Grumbachschale, semi-circular, damaged	0·46	0·09927	8·5	0·82	0·0175
	Gerbachschale, semi-circular, much damaged.....	0·19	0·168	3·7	0·29	0·0185
	Alpbachschale, semi-circular, much damaged	0·72	0·0274	8·2	1·18	0·0230
	Marseilles Canal	2·87	0·00043	19·6	4·4	0·0244
	Jard Canal.....	1·97	0·0004	19·6	4·4	0·0255
	Chesapeake, Ohio Canal.....	3·7	0·000698	22·6	7·9	0·0330
	Canal in England.....	2·43	0·000063	17·7	3·9	0·0184
	Lanter Canal, at Newbury.....	1·81	0·000664	29·5	1·8	0·0262
	Pannerden Canal, in Holland	10·2	0·000224	558·0	9·8	0·0254
	Canal of Marmels	2·31	0·0005	26·2	2·6	0·0301
	Linth Canal	7·8	0·00034	123·0	10·8	0·0222
	Hübengruben	0·6	0·0013	4·8	0·8	0·0237
	Hockenbach	0·87	0·000787	11·1	1·1	0·0243
	Speyerbach	1·46	0·000667	16·4	1·9	0·0260
	Mississippi.....	65·6	0·000667	2493·0	16·4	0·0270
	Bayou Plaquemine	16·8	0·00017	275·	25·6	0·0294
	Bayou La Fourche	13·1	0·0004	220·	23·6	0·0200
	Ohio, Point Pleasant	6·7	0·000093	1066·	7·9	0·0210
	Tiber at Rome	9·4	0·00013	239·	14·8	0·0228
	Newka	17·4	0·000015	886·	21·0	0·0252
	Newa	35·4	0·000014	1214·	19·7	0·0262
	Weser.....	9·5	0·0002	394·	9·8	0·0232
	Elbe	10·9	0·00031	315·	43·6	0·0285
	Rhine, in Holland.....	12·4	0·00015	1312·	14·7	0·0243
	Seine, at Paris	12·1	0·000137	...	...	0·025
	Seine, at Poissy	13·4	0·00007	...	...	0·028
	Saone, at Raconnay	11·8	0·00004	...	...	0·026
	Haine.....	5·2	0·0001	...	...	0·028
	CHANNELS OBSTRUCTED BY DETRITUS :—					
	Rhine, at Speyer	9·7	0·000112	1440·	9·7	0·026
	Rhine, at Gernersheim	10·8	0·000247	748·	...	0·0227
	Rhine, at Basle.....	6·9	0·001218	660·	9·1	0·03
	Lech	3·1	0·00115	157·	3·8	0·022
	Saalach	1·4	0·0011	68·	2·1	0·027
	Salzach	4·1	0·0012	38·	11·8	0·028
	Issar	3·9	0·0025	164·	4·4	0·0305
	Escher Canal.....	4·0	0·003	72·	4·9	0·03
	Plessur	3·5	0·00965	42·	4·6	0·027
	Rhine, at Rhinewald	·79	0·0142	14·	·99	0·031
	Mösa, at Misox.....	1·2	0·01187	13·	1·3	0·031
	Rhine, at Dornbeschgerthal ...	1·9	0·0075	16·	2·4	0·035
	Simme, at Lenk.....	1·6	0·0105	...	...	0·0345

TABLE XXVII.—VARIATIONS IN VALUE OF (n) (MAXIMUM AND MINIMUM).

Open Channels.		S		n	
Material.	Form.	(Relative values of.)		Min.	Max.
Pure cement	Semi-circular.....	·0015		·0101	·0104
2 p.c. to 1 fine sand	Ditto	·0015		·0108	·0114
Pure cement	Rectangular	·0049		·0096	·0107
Ditto	Arched invert and curved sides	·00016		·0111	·0114
Planed boards.....	Semi-circular.....	·0015		·0117	·0121
Carefully planed boards	Rectangular	·0152	·0047	·0084	·0097
Unplaned boards	Rectangular	·00824	·0015	·0104	·0132
Ditto	Triangular	·0049		·0118	·0124
Ashlar or neatly-jointed brickwork	Usual forms of aqueducts	·00002	·00028	·0103	·0211
Pebbles held in place by cement	Semi-circular.....	·0015		·0159	·0171
Ditto.....	Rectangular	·0049		·0170	·0215
Rubble masonry.....	Rectangular and semi-circular	·0046	·0009	·0138	·0385
Earth with masonry side walls	Rectangular and trapezoidal	·00003	·0022	·0137	·0560
Small rivers and canals...	Regular	·0037	·00015	·0106	·0299
Rivers and canals	Irregular	·00011	·0222	·0194	·0550
Pipes under Pressure.					
Material.					
New lead		·3463	·0008	·0067	·0090
Earthenware		·0025		·0111	
Wrought iron		·3055	·0008	·0067	·0160
Ditto galvanized		·0076	·1130	·0077	·0082
New cast iron		·00001	·00094	·0080	·0134
Ditto force main		·00088	·00046	·0110	·0132
Old cast iron		·00025	·03239	·0095	·0292
Ditto force main		·00922	·00105	·0149	·0342
Brickwork (inverted syphon)		·00051	·00007	·0138	·0199

TABLE XXVIII.—VARIATIONS IN VALUE OF (n) (AVERAGE) ACCORDING TO ALBERT WOLLHEIM, A.M.I.C.E.

Material of Sewer.	Condition of Surface.			
	Perfect.	Good.	Fair.	Bad.
Glazed stoneware pipe.....	·010	·011	·013	·015
Brickwork, ordinary	·012	·013	·015	·017
Ditto, glazed	·011	·012	·013	·014
Rendering, cement mortar.....	·011	·012	·013	·015
Ditto, neat cement	·010	·011	·012	·013
Ashlar, dressed	·013	·014	·015	·017
Iron (cast), uncoated	·012	·013	·014	·015
Ditto (wrought) and steel	·011	·012	·013	·014

TABLE XXIX.—VALUES OF $\left(\frac{l}{n}\right)$, FROM $n = 0.0070$ TO $n = 0.050$.

n	$\frac{l}{n}$	n	$\frac{l}{n}$
0.0070	258.76071	0.0200	90.56625
0.0075	241.51333	0.0205	88.35731
0.0080	226.41562	0.0210	86.25357
0.0085	213.09706	0.0215	84.24767
0.0090	201.25833	0.0220	82.33295
0.0195	190.66579	0.0225	80.50333
0.0100	181.13250	0.0230	78.75326
0.0105	172.50714	0.0240	74.47188
0.0110	164.66591	0.0250	72.45300
0.0115	157.50652	0.0260	69.66634
0.0120	150.94375	0.0270	67.08611
0.0125	144.90600	0.0275	65.86636
0.0130	139.33269	0.0280	64.69018
0.0135	134.17225	0.0290	62.45948
0.0140	129.38036	0.0300	60.37750
0.0145	124.91862	0.0320	56.60391
0.0150	120.75500	0.0340	53.27426
0.0155	116.85967	0.0350	51.75214
0.0160	113.20781	0.0360	50.31458
0.0165	109.77727	0.0380	47.66644
0.0170	106.54853	0.0400	45.28313
0.0175	103.50428	0.0420	43.12679
0.0180	100.62917	0.0444	41.16636
0.0185	97.90946	0.0460	39.37663
0.0190	95.33289	0.0480	37.73594
0.0195	92.88846	0.0500	36.22650

TABLE XXIII.—AREA AND HYDRAULIC MEAN DEPTH OF EGG-SHAPED SEWERS. (NEW FORM.)

Dimensions of Sewer.				Flowing full.					Flowing two-thirds full.					Flowing one-third full.				
Width.	Height.	Ft.	Ins.	Hydraulic Mean Depth.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydraulic Mean Depth.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)	Hydraulic Mean Depth.	log. (R.)	\sqrt{R} Feet.	Sectional Area. Square Feet.	log. (A.)
Ft.	Ins.			Feet.														
1	0	1	6	.2844	1.4539502	.53329	1.1150	0.0473277	.3074	1.4877315	.55443	.7223	1.8587381	.1920	1.2832211	.43817	.2543	1.4053105
1	1	2	1	.3318	1.508970	.57602	1.5176	0.1811813	.3586	1.5546783	.59883	.9831	1.9926317	.2240	1.3501679	.47328	.3461	1.5392041
1	4	2	0	.3792	1.5788890	.61549	1.9822	0.2971653	.4099	1.6126703	.64023	1.2841	1.0861567	.2560	1.4081599	.50596	.4521	1.6551881
1	6	2	3	.4266	1.6300415	.65007	2.5087	0.4994703	.4611	1.6638228	.67904	1.6252	1.0209207	.2880	1.4593124	.53665	.5722	1.7574931
1	8	2	6	.4740	1.6757990	.68847	3.0972	0.4909853	.5123	1.7095803	.71575	2.0064	0.3024337	.3200	1.5050699	.56568	.7064	1.8490081
1	10	2	9	.5214	1.7171917	.72208	3.7476	0.5737707	.5636	1.7509730	.75073	2.4277	0.3852211	.3320	1.5464626	.59329	.8547	1.9317955
2	0	3	0	.5698	1.7549802	.75403	4.4600	0.6493477	.6148	1.7887615	.78409	2.8392	0.4607981	.3840	1.5842511	.61967	1.0172	0.0073705
2	2	3	3	.6162	1.7897423	.78498	5.2343	0.7188719	.6660	1.8235236	.81608	3.9308	0.5303233	.4160	1.6190132	.64498	1.1938	0.0768947
2	4	3	6	.6636	1.8219270	.81461	6.0705	0.7832413	.7173	1.8557083	.84693	3.9325	0.5946917	.4480	1.6511979	.66932	1.3845	0.1412641
2	6	3	9	.7110	1.8518902	.84320	6.9687	0.8431677	.7685	1.8856715	.87664	4.5144	0.6546181	.4800	1.6811611	.69282	1.5894	0.2011905
2	8	4	0	.7584	1.8799190	.87086	7.9288	0.8992253	.8197	1.9137003	.90537	5.1364	0.7106757	.5120	1.7090899	.71554	1.8084	0.2570481
2	10	4	3	.8058	1.9062479	.89766	8.9509	0.9513831	.8710	1.9400292	.93337	5.7985	0.7653335	.5440	1.7355188	.73756	2.0415	0.3090959
3	0	4	6	.8532	1.9310715	.92262	10.0349	1.0015303	.9222	1.9648528	.96031	6.5007	0.8129807	.5760	1.7603424	.75894	2.2887	0.3595531
3	2	4	9	.9006	1.9545526	.94899	11.1809	1.0484917	.9734	1.9883339	.98661	7.2431	0.8599429	.6080	1.7838235	.77902	2.5301	0.4065153
3	4	5	0	.9480	1.9768290	.97365	12.3888	1.0980453	1.0247	0.0156103	1.0122	8.0256	0.9144937	.6400	1.8080999	.80000	2.8256	0.4510681
3	6	5	3	.9954	1.9980182	.99769	13.6586	1.1354237	1.0759	0.0817995	1.5382	8.8482	0.9468741	.6720	1.8272891	.81975	3.1152	0.4934465
3	8	5	6	1.0428	0.0182217	1.0216	14.9904	1.1758809	1.1271	0.0520030	1.0316	9.7110	0.9872811	.7040	1.8474926	.83904	3.4190	0.5333535
3	10	5	9	1.0902	0.0375268	1.0441	16.3842	1.2144409	1.1784	0.0713081	1.0355	10.6139	1.0258913	.7360	1.8667977	.85790	3.7369	0.5724637
4	0	6	0	1.1376	0.0560102	1.0655	17.8399	1.2514077	1.2296	0.0897915	1.1307	11.5569	1.0628581	.7680	1.8852811	.87635	4.0689	0.6094305
4	2	6	3	1.1850	0.0737390	1.0877	19.3575	1.2868653	1.2808	0.1075203	1.1327	12.5400	1.0983157	.8000	1.9030099	.89648	4.4150	0.6448881
4	4	6	6	1.2324	0.0907723	1.1101	20.9371	1.3209319	1.3321	0.1245536	1.1541	13.5633	1.1323923	.8320	1.9200432	.91214	4.7753	0.6789547
4	6	6	9	1.2798	0.1071627	1.1312	22.5786	1.3537127	1.3833	0.1403940	1.1761	14.6267	1.1631631	.8640	1.9364336	.92951	5.1479	0.7117355
4	8	7	0	1.3272	0.1229570	1.1520	24.2820	1.3855013	1.4345	0.1567383	1.1977	15.7302	1.1967517	.8960	1.9522279	.94657	5.5382	0.7432241
4	10	7	3	1.3746	0.1381970	1.1734	26.0474	1.4157813	1.4858	0.1719783	1.2188	16.8738	1.2272317	.9280	1.9674679	.96332	5.9408	0.7738041
5	0	7	6	1.4220	0.1529202	1.1924	27.8748	1.4452277	1.5370	0.18677015	1.2397	18.0376	1.2566781	.9600	1.9815911	.97979	6.3576	0.8032505
5	2	7	9	1.4694	0.1671607	1.2115	29.7641	1.4737087	1.5882	0.2009420	1.2602	19.2815	1.2851591	.9920	1.9964316	.99599	6.7885	0.8317315
5	4	8	0	1.5168	0.1809490	1.2306	31.7153	1.5012863	1.6395	0.2147303	1.2804	20.5455	1.3137357	1.0240	1.0102199	1.0129	7.2335	0.859081
5	6	8	3	1.5642	0.1943129	1.2506	33.7285	1.5280131	1.6907	0.2280942	1.3002	21.8497	1.3394635	1.0560	0.0235838	1.0286	7.6927	0.8860359
5	8	8	6	1.6116	0.2072779	1.2694	35.8086	1.5539431	1.7419	0.2410532	1.3198	23.1940	1.3653935	1.0880	0.0365488	1.0430	8.1660	0.9119659
5	10	8	9	1.6590	0.2198670	1.2880	37.9407	1.5791213	1.7932	0.2536468	1.3391	24.5784	1.3903717	1.1200	0.0491379	1.0593	8.6534	0.9371441
6	0	9	0	1.7064	0.2321015	1.3072	40.1897	1.6035303	1.8444	0.2658828	1.3580	26.0029	1.4150407	1.1520	0.0613724	1.0757	9.1549	0.9616131

TABLE XXIV.—V-SHAPED FLUME, RIGHT-ANGLED CROSS SECTION.

Depth of Water in Feet.	R = Hydran-lic Mean Depth in Feet.	log. (R.)	\sqrt{R} Feet.	A = Area in Square Feet.	log. (A.)	Depth of Water in Feet.	R = Hydran-lic Mean Depth in Feet.	log. (R.)	\sqrt{R} Feet.	A = Area in Square Feet.	log. (A.)
.40	.141	I-1505150	.3755	.16	I-2041200	1.75	.618	I-7914930	.7861	3.06	0.4860760
.5	.177	I-2474250	.4207	.25	I-3979400	1.8	.636	I-8037275	.7974	3.24	0.5108450
.6	.212	I-3266063	.4604	.36	I-5563026	1.9	.672	I-8272086	.8197	3.61	0.5575072
.7	.247	I-3935530	.4969	.49	I-6901960	2.	.707	I-8494850	.8408	4.	0.6020600
.75	.265	I-4235163	.5147	.56	I-7501226	2.1	.743	I-8706743	.8619	4.41	0.6444386
.8	.283	I-4515450	.5319	.64	I-8061800	2.2	.778	I-8908777	.8820	4.84	0.6848454
.9	.318	I-5026975	.5639	.81	I-9084850	2.25	.795	I-9006375	.8916	5.06	0.7043650
1.	.354	I-5484550	.5949	1.	0.0000000	2.3	.813	I-9101828	.9016	5.29	0.7234556
1.1	.389	I-5898477	.6236	1.21	0.0827851	2.4	.849	I-9286662	.9214	5.76	0.7604224
1.2	.424	I-6276362	.6511	1.44	0.1588624	2.5	.884	I-9463350	.9402	6.25	0.7958800
1.25	.442	I-6453650	.6648	1.56	0.1938200	2.6	.919	I-9634283	.9586	6.76	0.8299466
1.3	.459	I-6623984	.6833	1.69	0.2278868	2.7	.955	I-9798188	.9772	7.29	0.8627276
1.4	.494	I-6945880	.7028	1.96	0.2922560	2.75	.972	I-9877877	.9859	7.56	0.8786654
1.5	.530	I-7245463	.7286	2.25	0.3521826	2.8	.990	I-9956130	.9949	7.84	0.8943160
1.6	.566	I-7525750	.7524	2.56	0.4082400	2.9	1.025	0.0108330	1.0124	8.41	0.9247960
1.7	.601	I-7789039	.7752	2.89	0.4608978	3.	1.061	0.0255763	1.0301	9.	0.9542426



PART II.

TABLES FOR THE SOLUTION

OF

GANGUILLET AND KUTTER'S FORMULA,

where

$$v = \frac{\frac{l}{n} + \left(a + \frac{m}{S}\right)}{\sqrt{R} + \left(a + \frac{m}{S}\right)^n} R \sqrt{S}$$

and $Q = Av$

FOR SPECIAL VALUES OF (n) NOT CONTEMPLATED
IN PART I.

TABLE XXV.—COLLECTION OF USEFUL QUANTITIES WITH LOGARITHMS.

CONSTANTS—GANGUILLET AND KUTTER'S FORMULA.		
	LENGTH.	Logarithm.
a	41·6604676	1·6197242
m	0·0028075	5·4483281
$l = \sqrt{3 \cdot 280899}$	1·811325 feet	0·2579964
π ratio of circumference of circle to its diameter	3·1415926536	0·4971499
1 foot	0·304794 metre	1·4840071
1 mile	1609·3123 metres	3·2066403
1 metre	3·280899 feet (English)	0·5159929
AREA.		
1 square foot	0·0928997 square metre	2·9680142
1 square metre	10·764300 square feet	1·0819858
VOLUME.		
1 cubic foot	0·0283153 cubic metre	2·4520213
	6·23210 British imperial gallons	0·7946344
1 British impl. gallon.....	0·16046 cubic foot	1·2053654
	0·0045435 cubic metre	3·6573868
1 cubic metre	35·316585 cubic feet	1·5479787
	220·0966 British imperial gallons.....	2·3426132
WATER.		
<i>Weights of Certain Measures.</i>		
1 cubic foot	62·425 pounds	1·7953553
	28·3153 kilograms	1·4520213
1 British impl. gallon ...	10·0165 pounds	1·0007208
	4·5435 kilograms	0·6573868
1 cubic metre	2204·672 pounds	3·3433340
<i>Measures of Certain Weights.</i>		
1 pound	0·016019 cubic foot	2·2046447
	0·099834 British imperial gallon	2·9992792
	0·00045359 metre	4·6566660
1 kilogram	0·0353166 cubic foot	2·5479787
	0·2200966 British imperial gallon	1·3426132
	0·001 cubic metre	3·0000000
<i>Velocity of—</i>		
g accelerating force of gravity (latitude of London)	32·19078 feet per second	1·5077315
$2g$ ditto, ditto	64·38156	1·8087615
g ditto, ditto, Paris	32·18255	1·5076204
$2g$ ditto, ditto	64·36510	1·8086504
g ditto, ditto, New York	32·15945	1·5073086
$2g$ ditto, ditto	64·31890	1·8083386
1 foot per second	0·681818 mile per hour	1·8336687
1 mile per hour	1·466666 feet per second	0·1663313
1 metre per second.....	3·280899 feet per second	0·5159929
<i>Discharge of—</i>		
1 cubic foot per second ...	0·0283153 cubic metre per second	1·4520213
	6·23210 British impl. gallons per second	0·7946346
1 B. impl. gallon per sec.	0·004534 cubic metre	3·6573868
	0·16046 cubic foot	1·2053654
1 cubic metre per sec. ...	35·316585 cubic feet	1·5479787
	220·0966 British impl. gallons	2·3426132

TABLE XXVI.—THE FOLLOWING TABLE, GIVING VALUES OF (n) FOR DIFFERENT SURFACES EXPOSED TO THE FLOW OF WATER, IS TAKEN FROM FLYNN. THE DIMENSIONS ARE IN FEET.

R = HYDRAULIC MEAN DEPTH IN FEET.

S = SINE OF SLOPE.

Series of Bazin.		R in feet.	S.	Breadth of water surface in feet.	Depth in feet.	n.
No.						
28	Carefully planed plank	0.07	0.0048922	0.328	0.14	0.0096
29	" " "	0.05	0.0152370	0.328	0.079	0.0087
24	In cement, semi-circular	0.82	0.0014243	3.28	1.47	0.01005
2	" rectangular	0.49	0.005060	5.9	0.59	0.01040
25	" with one-third sand, semi-circular	0.85	0.0013802	3.28	1.61	0.01113
26	Plank, semi-circular	0.91	0.0015227	3.6	1.61	0.01195
21	" trapezoidal	0.82	0.0015213	4.6	1.24	0.01255
22	" "	0.65	0.0048751	4.36	0.98	0.01190
23	" triangular, 45°	0.65	0.004655	4.36	1.87	0.0119
6	" rectangular	0.65	0.0022136	6.5	0.85	0.13
7	" "	0.52	0.004889	6.5	0.62	0.0119
8	" "	0.46	0.0081629	6.5	0.52	0.0115
9	" "	0.72	0.0014678	6.5	0.91	0.0129
10	" "	0.46	0.0058744	6.5	0.55	0.0117
11	" "	0.42	0.0083805	6.5	0.49	0.0114
18	" "	0.65	0.0045988	3.9	0.91	0.0114
19	" "	0.49	0.0042731	2.6	0.82	0.0114
20	" "	0.32	0.0059829	1.6	0.62	0.0114
RAMMED GRAVEL :—						
27	½ to ¾ inch thick, semi-circular	0.75	0.0013639	3.28	1.34	0.0163
4	" " " rectangular	0.65	0.0049736	6.0	0.85	0.0170
BATTENS PLACED :—						
12	¾-inch apart, rectangular	0.75	0.0014678	6.4	1.01	0.0149
13	" " "	0.55	0.0059664	6.4	0.65	0.0147
14	" " "	0.49	0.0088618	6.4	0.59	0.0149
15	2 inches " "	0.95	0.0014678	6.4	1.31	0.0208
16	" " "	0.69	0.0059976	6.4	0.88	0.0211
17	" " "	0.63	0.088618	6.4	0.78	0.0215
1.2	Ashlar, rectangular	1.77	0.0008400	8.5	3.0	0.0133
3	Brickwork, rectangular	0.55	0.050250	3.0	0.65	0.0129
39	Ashlar	0.59	0.0081	3.9	0.85	0.0129
RUBBLE :—						
32	Rather damaged, rectangular	0.52	0.10076	5.9	0.63	0.0167
33	" " "	0.65	0.036856	5.9	0.88	0.0170
1.4	" " " new, "	0.63	0.060	3.28	0.95	0.0180
1.3	" " " "	0.72	0.029	3.28	1.18	0.0184
1.6	" " " "	0.82	0.014	3.28	1.54	0.0182
1.5	" " " "	0.88	0.0122	3.28	1.60	0.0192
44	With deposits on the bed, rect- angular	1.47	0.00032	6.56	2.62	0.0204
46	With deposits on the bed, rect- angular	1.31	0.00032	6.56	2.29	0.0210
35	Damaged rubble, trapezoidal...	1.21	0.014221	4.9	2.29	0.0220

TABLE XXVI.—*continued.*

Series of Bazin.		R in feet.	S	Breadth of water surface in feet.	Depth in feet.	n.
No.						
OTHER OBSERVATIONS :—						
	Gotenbachschale, new rubble, semi-circular	0.32	0.044	5.5	0.59	0.0145
	Grumbachschale, semi-circular, damaged	0.46	0.09927	8.5	0.82	0.0175
	Gerbachschale, semi-circular, much damaged	0.19	0.168	3.7	0.29	0.0185
	Alpbachschale, semi-circular, much damaged	0.72	0.0274	8.2	1.18	0.0230
	Marseilles Canal	2.87	0.00043	19.6	4.4	0.0244
	Jard Canal	1.97	0.0004	19.6	4.4	0.0255
	Chesapeake, Ohio Canal	3.7	0.000698	22.6	7.9	0.0330
	Canal in England	2.43	0.000063	17.7	3.9	0.0184
	Lanter Canal, at Newbury	1.81	0.000664	29.5	1.8	0.0262
	Pannerden Canal, in Holland	10.2	0.000224	558.0	9.8	0.0254
	Canal of Marmels	2.31	0.0005	26.2	2.6	0.0301
	Linth Canal	7.8	0.00034	123.0	10.8	0.0222
	Hübengruben	0.6	0.0013	4.8	0.8	0.0237
	Hockenbach	0.87	0.000787	11.1	1.1	0.0243
	Speyerbach	1.46	0.000667	16.4	1.9	0.0260
	Mississippi	65.6	0.000667	2493.0	16.4	0.0270
	Bayou Plaquemine	16.8	0.00017	27.5	25.6	0.0294
	Bayou La Fourche	13.1	0.0004	220.	23.6	0.0200
	Ohio, Point Pleasant	6.7	0.000093	1066.	7.9	0.0210
	Tiber at Rome	9.4	0.00013	239.	14.8	0.0228
	Newka	17.4	0.000015	886.	21.0	0.0252
	Newa	35.4	0.000014	1214.	19.7	0.0262
	Weser	9.5	0.0002	394.	9.8	0.0232
	Elbe	10.9	0.00031	315.	43.6	0.0285
	Rhine, in Holland	12.4	0.00015	1312.	14.7	0.0243
	Seine, at Paris	12.1	0.000137	...	...	0.025
	Seine, at Poissy	13.4	0.00007	...	...	0.028
	Saone, at Raonnay	11.8	0.00004	...	...	0.026
	Haine	5.2	0.0001	...	...	0.028
CHANNELS OBSTRUCTED BY DETRITUS :—						
	Rhine, at Speyer	9.7	0.000112	1440.	9.7	0.026
	Rhine, at Germersheim	10.8	0.000247	748.	...	0.0227
	Rhine, at Basle	6.9	0.001218	660.	9.1	0.03
	Lech	3.1	0.00115	157.	3.8	0.022
	Saalach	1.4	0.0011	68.	2.1	0.027
	Salzach	4.1	0.0012	38.	11.8	0.028
	Issar	3.9	0.0025	164.	4.4	0.0305
	Escher Canal	4.0	0.003	72.	4.9	0.03
	Plessur	3.5	0.00965	42.	4.6	0.027
	Rhine, at Rhinewald .....	.79	0.0142	14.	.99	0.031
	Mösa, at Misox	1.2	0.01187	13.	1.3	0.031
	Rhine, at Dornbeschgerthal ...	1.9	0.0075	16.	2.4	0.035
	Simme, at Leuk	1.6	0.0105	...	...	0.0345

TABLE XXVII.—VARIATIONS IN VALUE OF (n) (MAXIMUM AND MINIMUM).

Open Channels.		S		n	
Material.	Form.	(Relative values of.)		Min.	Max.
Pure cement	Semi-circular.....	·0015		·0101	·0104
2 p.c. to 1 fine sand	Ditto	·0015		·0108	·0114
Pure cement	Rectangular	·0049		·0096	·0107
Ditto	Arched invert and curved sides	·00016		·0111	·0114
Planed boards.....	Semi-circular.....	·0015		·0117	·0121
Carefully planed boards	Rectangular	·0152	·0047	·0084	·0097
Unplaned boards	Rectangular	·00824	·0015	·0104	·0132
Ditto	Triangular.....	·0049		·0118	·0124
Ashlar or neatly-jointed brickwork	Usual forms of aqueducts	·00002	·00028	·0103	·0211
Pebbles held in place by cement	Semi-circular.....	·0015		·0159	·0171
Ditto.....	Rectangular	·0049		·0170	·0215
Rubble masonry.....	Rectangular and semi-circular	·0046	·0009	·0138	·0385
Earth with masonry side walls	Rectangular and trapezoidal	·00003	·0022	·0137	·0560
Small rivers and canals...	Regular	·0037	·00015	·0106	·0299
Rivers and canals	Irregular	·00011	·0222	·0194	·0550
Pipes under Pressure.					
Material.					
New lead		·3463	·0008	·0067	·0090
Earthenware		·0025		·0111	
Wrought iron		·3055	·0008	·0067	·0160
Ditto galvanized		·0076	·1130	·0077	·0082
New cast iron		·00001	·00094	·0080	·0134
Ditto force main		·00088	·00046	·0110	·0132
Old cast iron		·00025	·03239	·0095	·0292
Ditto force main		·00922	·00105	·0149	·0342
Brickwork (inverted syphon)		·00051	·00007	·0138	·0199

TABLE XXVIII.—VARIATIONS IN VALUE OF (n) (AVERAGE) ACCORDING TO ALBERT WOLLHEIM, A.M.I.C.E.

Material of Sewer.	Condition of Surface.			
	Perfect.	Good.	Fair.	Bad.
Glazed stoneware pipe.....	·010	·011	·013	·015
Brickwork, ordinary	·012	·013	·015	·017
Ditto, glazed	·011	·012	·013	·014
Rendering, cement mortar.....	·011	·012	·013	·015
Ditto, neat cement	·010	·011	·012	·013
Ashlar, dressed	·013	·014	·015	·017
Iron (cast), uncoated	·012	·013	·014	·015
Ditto (wrought) and steel	·011	·012	·013	·014

TABLE XXIX.—VALUES OF $\left(\frac{l}{n}\right)$, FROM $n=0.0070$ TO $n=0.050$.

n	$\frac{l}{n}$	n	$\frac{l}{n}$
0.0070	258.76071	0.0200	90.56625
0.0075	241.51333	0.0205	88.35731
0.0080	226.41562	0.0210	86.25357
0.0085	213.09706	0.0215	84.24767
0.0090	201.25833	0.0220	82.33295
0.0195	190.66579	0.0225	80.50333
0.0100	181.13250	0.0230	78.75326
0.0105	172.50714	0.0240	74.47188
0.0110	164.66591	0.0250	72.45300
0.0115	157.50652	0.0260	69.66634
0.0120	150.94375	0.0270	67.08611
0.0125	144.90600	0.0275	65.86636
0.0130	139.33269	0.0280	64.69018
0.0135	134.17225	0.0290	62.45948
0.0140	129.38036	0.0300	60.37750
0.0145	124.91862	0.0320	56.60391
0.0150	120.75500	0.0340	53.27426
0.0155	116.85967	0.0350	51.75214
0.0160	113.20781	0.0360	50.31458
0.0165	109.77727	0.0380	47.66644
0.0170	106.54853	0.0400	45.28313
0.0175	103.50428	0.0420	43.12679
0.0180	100.62917	0.0444	41.16636
0.0185	97.90946	0.0460	39.37663
0.0190	95.33289	0.0480	37.73594
0.0195	92.88846	0.0500	36.22650

TABLE XXX.—TABLE OF VALUES OF \sqrt{s} , LOG. \sqrt{s} , AND $(a + \frac{m}{s})$ FOR OPEN AND CLOSED CHANNELS, FOR VARIOUS INCLINATIONS.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	log. \sqrt{s}	$a + \frac{m}{s}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	log. \sqrt{s}	$a + \frac{m}{s}$
1	5280	1.0	0.0000000	41.66328	77	68.57	.113981	1.0567546	41.87665
2	2640	.707106	1.8494850	41.66608	78	67.69	.113228	1.0539527	41.87945
3	1760	.577350	1.7614394	41.66889	79	66.84	.112509	1.0511865	41.88226
4	1320	.5	1.6989700	41.67169	80	66	.111803	1.0484550	41.88507
5	1056	.447214	1.6505150	41.67451	81	65.18	.111111	1.0457575	41.88788
6	880	.408248	1.6109244	41.67731	82	64.39	.110431	1.0430931	41.89068
7	754.3	.377978	1.5774510	41.68013	83	63.62	.109764	1.0404610	41.89349
8	660	.353553	1.5484550	41.68293	84	62.80	.109109	1.0378604	41.89630
9	586.7	.333333	1.5228787	41.68574	85	62.12	.108465	1.0352905	41.89911
10	528	.316228	1.5000000	41.68854	86	61.40	.107833	1.0327508	41.90191
11	480	.301511	1.4793037	41.69135	87	60.69	.107211	1.0302404	41.90472
12	440	.288675	1.4604094	41.69416	88	60	.106600	1.0277587	41.90753
13	406.2	.277350	1.4430283	41.69697	89	59.32	.106000	1.0253050	41.91034
14	377.1	.267261	1.4269360	41.69977	90	58.66	.105409	1.0228787	41.91314
15	352	.258199	1.4119544	41.70258	91	58.02	.104828	1.0204793	41.91595
16	330	.25	1.3979400	41.70538	92	57.39	.104257	1.0181061	41.91870
17	310.6	.242536	1.3847755	41.70820	93	56.78	.103695	1.0157585	41.92157
18	293.3	.235702	1.3723637	41.71100	94	56.17	.103142	1.0134361	41.92437
19	277.9	.229416	1.3606232	41.71381	95	55.58	.102598	1.0111382	41.92718
20	264	.223607	1.3494850	41.71662	96	55	.102062	1.0088644	41.92999
21	251.4	.218218	1.3388904	41.71943	97	54.43	.101535	1.0066141	41.93280
22	240	.213200	1.3287887	41.72223	98	53.88	.101015	1.0043870	41.93560
23	229.6	.208514	1.3191361	41.72504	99	53.34	.100504	1.0021824	41.93841
24	220	.204124	1.3098944	41.72785	100	52.8	.1	1.0000000	41.94122
25	211.2	.2	1.3010300	41.72785	101	52.38	.099504	2.9978393	41.94403
26	203.1	.196116	1.2925133	41.73066	102	51.76	.099015	2.9956999	41.94683
27	195.6	.192450	1.2843181	41.73346	103	51.26	.098533	2.9935814	41.94964
28	188.6	.188982	1.2764210	41.73627	104	50.77	.098058	2.9914833	41.95245
29	182.1	.185695	1.2688010	41.73908	105	50.29	.097590	2.9894054	41.95526
30	176	.182574	1.2614394	41.74189	106	49.81	.097129	2.9873471	41.95806
31	170.3	.179605	1.2543191	41.74469	107	49.35	.096674	2.9853081	41.96087
32	165	.176777	1.2474250	41.74750	108	48.89	.096225	2.9832868	41.96368
33	160	.174077	1.2407430	41.75031	109	48.44	.095783	2.9812868	41.96649
34	155.3	.171499	1.2342605	41.75312	110	48	.095348	2.9793037	41.96929
35	150.9	.169031	1.2279660	41.75592	111	47.57	.094916	2.9773385	41.97210

36	146.7	166567	I-2218487	41-76154	112	47-14	-094491	2-9753910	41-97491
37	142.7	164399	I-2158991	41-76485	113	46-72	-094072	2-9734608	41-97772
38	138.9	162221	I-2101082	41-76715	114	45-31	-093659	2-9715476	41-98052
39	135.4	160125	I-2044677	41-76996	115	45-91	-093250	2-9696511	41-98333
40	132.	158114	I-1989700	41-77277	116	45-52	-092848	2-9677710	41-98614
41	128.8	156174	I-1936081	41-77558	117	45-13	-092450	2-9659071	41-98895
42	125.7	154303	I-1883754	41-77838	118	44-75	-092057	2-9640590	41-99175
43	122.8	152499	I-1832657	41-78119	119	44-37	-091669	2-9622265	41-99456
44	120.	150756	I-1782737	41-78400	120	44.	-091287	2-9604094	41-99737
45	117.3	149071	I-1733937	41-78681	121	43-64	-090909	2-9586073	42-00018
46	114.8	147444	I-1686211	41-78961	122	43-28	-090536	2-9568201	42-00298
47	112.3	145865	I-1639511	41-79242	123	42-93	-090167	2-9550474	42-00579
48	110.	144337	I-1593794	41-79523	124	42-58	-089803	2-9532892	42-00860
49	107.8	142857	I-1549020	41-79804	125	42-24	-089442	2-9515450	42-01141
50	105.6	141421	I-1505150	41-80084	126	41-91	-089087	2-9498147	42-01421
51	103.5	140028	I-1462149	41-80365	127	41-58	-088736	2-9480981	42-01702
52	101.5	138676	I-1419983	41-80646	128	41-25	-088388	2-9463950	42-01983
53	99.62	137361	I-1378621	41-80927	129	40-93	-088045	2-9447051	42-02264
54	97.78	136085	I-1336031	41-81207	130	40-62	-087706	2-9430283	42-02544
55	96.	134839	I-1298187	41-81488	131	40-31	-087370	2-9413644	42-02825
56	94.29	133630	I-1259060	41-81769	132	40.	-087039	2-9397130	42-03106
57	92.65	132453	I-1220626	41-82050	133	39-70	-086711	2-9380742	42-03387
58	91-03	131305	I-1182860	41-82330	134	39-40	-086387	2-9364476	42-03667
59	89-49	130189	I-1145740	41-82611	135	39-11	-086066	2-9348331	42-03948
60	88.	129100	I-1109244	41-82892	136	38-82	-085749	2-9332305	42-04229
61	86.56	128037	I-1073351	41-83173	137	38-54	-085436	2-9316397	42-04510
62	85-16	127000	I-1038042	41-83453	138	38-26	-085126	2-9300605	42-04790
63	83-81	126988	I-1003297	41-83734	139	37-98	-084819	2-9284926	42-05071
64	82.50	125	I-9691000	41-84015	140	37-71	-084516	2-9269360	42-05352
65	81-23	124035	I-9354333	41-84296	141	37-45	-084215	2-9253904	42-05633
66	80.	123091	I-9002280	41-84576	142	37-18	-083918	2-9238558	42-05913
67	78-81	122169	I-8696626	41-84857	143	36-92	-083624	2-9223320	42-06194
68	77-65	121286	I-837455	41-85138	144	36-67	-083333	2-9208188	42-06475
69	76-52	120386	I-805755	41-85419	145	36-41	-083046	2-9193160	42-06756
70	75-43	119524	I-774510	41-85699	146	36-16	-082760	2-9178236	42-07036
71	74-36	118678	I-743708	41-85980	147	35-92	-082479	2-9163413	42-07317
72	73-33	117851	I-713337	41-86261	148	35-68	-082199	2-9148691	42-07598
73	72-33	117041	I-6833386	41-86542	149	35-44	-081923	2-9134069	42-07879
74	71-35	116248	I-6533841	41-86822	150	35-20	-081659	2-9119544	42-08159
75	70-40	115470	I-6234694	41-87103	151	34-97	-081379	2-9105115	42-08440
76	69-47	114708	I-5959592	41-87384	152	34-74	-081111	2-9090782	42-08721

TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$
153	34.51	.080845	2.9076543	42.09002	350	15.09	.053452	2.7279660	42.64309
154	34.29	.080582	2.9062396	42.09282	355	15.87	.053074	2.7248858	42.65713
155	34.06	.080322	2.9048342	42.09563	360	14.67	.052705	2.7218487	42.67117
156	33.85	.080065	2.9034377	42.09844	365	14.47	.052342	2.7188535	42.68321
157	33.63	.079809	2.9020502	42.10125	370	14.27	.051988	2.7158991	42.69924
158	33.42	.079556	2.9006715	42.10405	375	14.08	.051640	2.7129844	42.71328
159	33.21	.079305	2.8993014	42.10686	380	13.90	.051299	2.7101082	42.72732
160	33.	.079057	2.8979400	42.10967	385	13.71	.050965	2.7072696	42.74136
161	32.8	.078811	2.8965871	42.11248	390	13.54	.050637	2.7044677	42.75539
162	32.59	.078568	2.8952425	42.11528	395	13.37	.050315	2.7017015	42.76943
163	32.39	.078326	2.8939062	42.11809	400	13.20	.050000	2.6989700	42.78347
164	32.20	.078087	2.8925781	42.12090	405	13.04	.049690	2.6962725	42.79751
165	32.	.077850	2.8912580	42.12371	410	12.88	.049387	2.6936081	42.81154
166	31.81	.077615	2.8899450	42.12651	415	12.72	.049088	2.6909760	42.82551
167	31.62	.077382	2.8886418	42.12933	420	12.57	.048795	2.6883754	42.83962
168	31.43	.077152	2.8873454	42.13213	425	12.42	.048507	2.6858055	42.85366
169	31.24	.076923	2.8860566	42.13494	430	12.28	.048224	2.6832658	42.86769
170	31.06	.076697	2.8847755	42.13774	435	12.14	.047946	2.6807554	42.88173
171	30.88	.076472	2.8835019	42.14056	440	12.	.047673	2.6782737	42.89577
172	30.7	.076249	2.8822558	42.14336	445	11.87	.047404	2.6758200	42.90981
173	30.52	.076029	2.8809769	42.14617	450	11.73	.047140	2.6733937	42.92384
174	30.34	.075810	2.8797254	42.14897	455	11.60	.046880	2.6709943	42.93788
175	30.17	.075593	2.8784810	42.15178	460	11.48	.046625	2.6686211	42.95192
176	30.	.075378	2.8772437	42.15459	465	11.35	.046374	2.6662735	42.96596
177	29.83	.075164	2.8760134	42.15740	470	11.24	.046126	2.6639511	42.97999
178	29.66	.074953	2.8747900	42.16020	475	11.12	.045883	2.6616532	42.99403
179	29.50	.074744	2.8735735	42.16301	480	11.	.045644	2.6593794	43.00807
180	29.33	.074536	2.8723637	42.16582	485	10.89	.045407	2.6571291	43.02211
181	29.17	.074329	2.8711607	42.16863	490	10.78	.045175	2.6549020	43.03614
182	29.01	.074125	2.8699643	42.17143	495	10.67	.044947	2.6526974	43.05018
183	28.85	.073922	2.8687745	42.17424	500	10.56	.044721	2.6505150	43.06422
184	28.70	.073721	2.8675911	42.17705	505	10.46	.044499	2.6483543	43.07826
185	28.54	.073521	2.8664141	42.17986	510	10.35	.044281	2.6462149	43.09229
186	28.39	.073324	2.8652435	42.18266	515	10.25	.044065	2.6440964	43.10633
187	28.24	.073127	2.8640792	42.18547	520	10.15	.043853	2.6419983	43.12037
188	28.09	.072932	2.8629211	42.18828	525	10.06	.043644	2.6399203	43.13441

189	27.94	-0.72739	2.8617691	42.19109	530	9.962	-0.43437	2.6378621	43.14844
190	27.79	-0.72548	2.8606232	42.19380	535	9.870	-0.43234	2.6358231	43.16218
191	27.61	-0.72357	2.8594833	42.19670	540	9.778	-0.43033	2.6338031	43.17652
192	27.50	-0.72169	2.8583494	42.19951	545	9.688	-0.42835	2.6318017	43.19056
193	27.36	-0.71982	2.8572213	42.20232	550	9.600	-0.42640	2.6298187	43.20459
194	27.22	-0.71796	2.8560991	42.20512	555	9.513	-0.42448	2.6278535	43.21863
195	27.08	-0.71612	2.8549827	42.20793	560	9.428	-0.42258	2.6259060	43.23267
196	26.94	-0.71429	2.8538720	42.21074	565	9.345	-0.42070	2.6239758	43.24671
197	26.80	-0.71247	2.8527669	42.21355	570	9.263	-0.41885	2.6220626	43.26074
198	26.67	-0.71067	2.8516674	42.21635	575	9.182	-0.41703	2.6201661	43.27478
199	26.53	-0.70888	2.8505735	42.21916	580	9.103	-0.41523	2.6182830	43.28882
200	26.40	-0.70710	2.8494850	42.22197	585	9.026	-0.41345	2.6164221	43.30285
205	25.76	-0.69843	2.8441231	42.23601	590	8.949	-0.41169	2.6145740	43.31689
210	25.14	-0.69007	2.8388904	42.25004	595	8.874	-0.40996	2.6127415	43.33093
215	24.56	-0.68199	2.8337808	42.26408	600	8.800	-0.40825	2.6109244	43.34497
220	24.00	-0.67419	2.8287887	42.27812	605	8.727	-0.40656	2.6091223	43.35901
225	23.47	-0.66667	2.8239087	42.29216	610	8.656	-0.40489	2.6073351	43.37304
230	22.96	-0.65938	2.8191361	42.30619	615	8.585	-0.40324	2.6055624	43.38708
235	22.48	-0.65233	2.8144661	42.32023	620	8.516	-0.40161	2.6038042	43.40112
240	22.00	-0.64549	2.8098944	42.33427	625	8.448	-0.40000	2.6020600	43.41516
245	21.55	-0.63885	2.8054170	42.34831	630	8.383	-0.39841	2.6003297	43.42919
250	21.12	-0.63246	2.8010300	42.36234	635	8.317	-0.39684	2.5986131	43.44323
255	20.71	-0.62620	2.7967299	42.37638	640	8.250	-0.39528	2.5969100	43.45727
260	20.31	-0.62018	2.7925133	42.39042	645	8.186	-0.39375	2.5952201	43.47131
265	19.92	-0.61430	2.7883771	42.40446	650	8.123	-0.39223	2.5935433	43.48534
270	19.56	-0.60858	2.7843181	42.41849	655	8.061	-0.39073	2.5918793	43.49938
275	19.20	-0.60302	2.7803337	42.43253	660	8.000	-0.38925	2.5902280	43.51342
280	18.86	-0.59761	2.7764210	42.44657	665	7.940	-0.38778	2.5885892	43.52746
285	18.53	-0.59235	2.7725776	42.46061	670	7.881	-0.38633	2.5869626	43.54149
290	18.20	-0.58722	2.7688010	42.47464	675	7.822	-0.38490	2.5853481	43.55553
295	17.90	-0.58222	2.7650890	42.48868	680	7.765	-0.38348	2.5837455	43.56957
300	17.60	-0.57735	2.7614394	42.50272	685	7.708	-0.38208	2.5821547	43.58361
305	17.31	-0.57260	2.7578501	42.51676	690	7.652	-0.38069	2.5805755	43.59764
310	17.03	-0.56796	2.7543191	42.53079	695	7.597	-0.37932	2.5790076	43.61168
315	16.76	-0.56344	2.7508447	42.54483	700	7.543	-0.37796	2.5774510	43.62572
320	16.50	-0.55902	2.7474250	42.55887	705	7.490	-0.37662	2.5759054	43.63976
325	16.25	-0.55470	2.7440583	42.57291	710	7.437	-0.37529	2.5743708	43.65379
330	16.00	-0.55048	2.7407430	42.58694	715	7.385	-0.37398	2.5728470	43.66783
335	15.76	-0.54636	2.7374776	42.60098	720	7.333	-0.37268	2.5713338	43.68187
340	15.53	-0.54232	2.7342605	42.61502	725	7.283	-0.37139	2.5698310	43.69591
345	15.30	-0.53838	2.7310905	42.62906	730	7.233	-0.37012	2.5683386	43.70994

TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{S}	$\log. \sqrt{S}$	$a + \frac{m}{S}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{S}	$\log. \sqrt{S}$	$a + \frac{m}{S}$
735	7.184	-0.36885	2.5668563	43.72398	1120	4.714	-0.29881	2.4753910	44.80477
740	7.135	-0.36761	2.5653841	43.73802	1125	4.693	-0.29814	2.4744237	44.81891
745	7.087	-0.36637	2.5639219	43.75206	1130	4.673	-0.29748	2.4734608	44.83294
750	7.040	-0.36515	2.5624684	43.76609	1135	4.652	-0.29683	2.4725021	44.84698
755	6.993	-0.36394	2.5610265	43.78013	1140	4.632	-0.29617	2.4715476	44.86102
760	6.948	-0.36274	2.5595982	43.79417	1145	4.611	-0.29553	2.4705973	44.87505
765	6.902	-0.36155	2.5581698	43.80821	1150	4.591	-0.29488	2.4696511	44.88909
770	6.857	-0.36038	2.5567546	43.82224	1155	4.571	-0.29425	2.4687090	44.90313
775	6.812	-0.35921	2.5553491	43.83628	1160	4.552	-0.29361	2.4677710	44.91717
780	6.769	-0.35806	2.5539527	43.85032	1165	4.532	-0.29298	2.4668370	44.93121
785	6.726	-0.35691	2.5525652	43.86436	1170	4.513	-0.29235	2.4659071	44.94524
790	6.684	-0.35578	2.5511865	43.87839	1175	4.494	-0.29173	2.4649811	44.95928
795	6.642	-0.35466	2.5498164	43.89243	1180	4.475	-0.29111	2.4640590	44.97331
800	6.600	-0.35355	2.5484550	43.90647	1185	4.456	-0.29049	2.4631408	44.98736
805	6.559	-0.35245	2.5471021	43.92051	1190	4.437	-0.28988	2.4622265	45.00139
810	6.518	-0.35136	2.5457575	43.93454	1195	4.418	-0.28928	2.4613160	45.01543
815	6.478	-0.35028	2.5444212	43.94858	1200	4.400	-0.28868	2.4604091	45.02947
820	6.439	-0.34922	2.5430931	43.96262	1205	4.382	-0.28808	2.4595065	45.04351
825	6.400	-0.34816	2.5417730	43.97666	1210	4.364	-0.28849	2.4586073	45.05754
830	6.362	-0.34710	2.5404610	43.99069	1215	4.346	-0.28889	2.4577119	45.07158
835	6.324	-0.34606	2.5391568	44.00473	1220	4.328	-0.28930	2.4568201	45.08562
840	6.286	-0.34503	2.5378604	44.01877	1225	4.310	-0.28971	2.4559320	45.09966
845	6.248	-0.34401	2.5365716	44.03281	1230	4.293	-0.28913	2.4550474	45.11369
850	6.212	-0.34300	2.5352905	44.04684	1235	4.275	-0.28855	2.4541665	45.12773
855	6.175	-0.34199	2.5340169	44.06088	1240	4.258	-0.28898	2.4532892	45.14177
860	6.140	-0.34099	2.5327508	44.07492	1245	4.241	-0.28841	2.4524153	45.15511
865	6.104	-0.34001	2.5314919	44.08896	1250	4.224	-0.28784	2.4515450	45.16894
870	6.069	-0.33903	2.5302404	44.10299	1255	4.207	-0.28728	2.4506781	45.18288
875	6.034	-0.33806	2.5289960	44.11703	1260	4.190	-0.28672	2.4498147	45.19792
880	6.000	-0.33710	2.5277587	44.13107	1265	4.174	-0.28616	2.4489547	45.21196
885	5.966	-0.33614	2.5265284	44.14511	1270	4.157	-0.28561	2.4480981	45.22599
890	5.932	-0.33520	2.5253050	44.15914	1275	4.141	-0.28506	2.4472449	45.24003
895	5.900	-0.33426	2.5240885	44.17318	1280	4.129	-0.28451	2.4463950	45.25407
900	5.867	-0.33333	2.5228787	44.18722	1285	4.109	-0.28396	2.4455484	45.26811
905	5.834	-0.33241	2.5216757	44.20126	1290	4.093	-0.28341	2.4447051	45.28214
910	5.802	-0.33108	2.5204793	44.21521	1295	4.077	-0.28289	2.4438651	45.29618

915	5.770	-0.83059	2.5192895	44.22933	1300	4.062	-0.27735	2.4130283	45.81022
920	5.739	-0.82969	2.5181061	44.24337	1305	4.046	-0.27682	2.4421947	45.82426
925	5.708	-0.82879	2.5169291	44.25741	1310	4.031	-0.27629	2.4413614	45.83829
930	5.677	-0.82791	2.5157585	44.27144	1315	4.015	-0.27576	2.4405371	45.85233
935	5.648	-0.82703	2.5145942	44.28548	1320	4.	-0.27524	2.4397130	45.86637
940	5.617	-0.82616	2.5134361	44.29952	1325	3.985	-0.27472	2.4388921	45.88041
945	5.587	-0.82530	2.5122841	44.31356	1330	3.970	-0.27420	2.4380742	45.89444
950	5.558	-0.82444	2.5111382	44.32759	1335	3.955	-0.27369	2.4372591	45.90848
955	5.528	-0.82359	2.5099983	44.34163	1340	3.940	-0.27318	2.4364476	45.92252
960	5.500	-0.82275	2.5088644	44.35567	1345	3.926	-0.27276	2.4356389	45.93656
965	5.472	-0.82191	2.5077363	44.36971	1350	3.911	-0.27217	2.4348381	45.95059
970	5.434	-0.82108	2.5066141	44.38374	1355	3.897	-0.27166	2.4340304	45.96463
975	5.415	-0.82026	2.5054977	44.39778	1360	3.882	-0.27116	2.4332305	45.97867
980	5.388	-0.81944	2.5043870	44.41182	1365	3.868	-0.27067	2.4324387	45.99271
985	5.360	-0.81863	2.5032819	44.42585	1370	3.854	-0.27017	2.4316397	45.50674
990	5.333	-0.81782	2.5021824	44.43989	1375	3.840	-0.26968	2.4308487	45.52078
995	5.306	-0.81702	2.5010885	44.45393	1380	3.826	-0.26919	2.4300605	45.53482
1000	5.280	-0.81623	2.5000000	44.46797	1385	3.812	-0.26870	2.4292751	45.54886
1005	5.253	-0.81544	2.4989170	44.48201	1390	3.799	-0.26822	2.4284926	45.56289
1010	5.228	-0.81466	2.4978393	44.49604	1395	3.785	-0.26774	2.4277129	45.57693
1015	5.202	-0.81388	2.4967670	44.51008	1400	3.771	-0.26726	2.4269360	45.59097
1020	5.176	-0.81311	2.4956999	44.52412	1405	3.758	-0.26679	2.4261618	45.60501
1025	5.151	-0.81235	2.4946381	44.53816	1410	3.745	-0.26631	2.4253904	45.61904
1030	5.126	-0.81159	2.4935814	44.55219	1415	3.731	-0.26584	2.4246218	45.63308
1035	5.101	-0.81083	2.4925298	44.56623	1420	3.718	-0.26537	2.4238558	45.64712
1040	5.077	-0.81009	2.4914833	44.58027	1425	3.705	-0.26491	2.4230926	45.66116
1045	5.053	-0.80934	2.4904419	44.59431	1430	3.692	-0.26444	2.4223320	45.67519
1050	5.029	-0.80861	2.4894054	44.60834	1435	3.680	-0.26398	2.4215740	45.68923
1055	5.005	-0.80787	2.4883738	44.62238	1440	3.667	-0.26352	2.4208188	45.70327
1060	4.981	-0.80715	2.4873471	44.63642	1445	3.654	-0.26306	2.4200661	45.71731
1065	4.958	-0.80643	2.4863252	44.65046	1450	3.641	-0.26261	2.4193160	45.73134
1070	4.935	-0.80571	2.4853081	44.66449	1455	3.629	-0.26216	2.4185685	45.74538
1075	4.912	-0.80499	2.4842958	44.67853	1460	3.617	-0.26171	2.4178236	45.75942
1080	4.889	-0.80429	2.4832881	44.69257	1465	3.604	-0.26126	2.4170812	45.77346
1085	4.866	-0.80359	2.4822851	44.70661	1470	3.592	-0.26082	2.4163418	45.78749
1090	4.844	-0.80289	2.4812868	44.72064	1475	3.580	-0.26038	2.4156040	45.80153
1095	4.822	-0.80220	2.4802929	44.73468	1480	3.568	-0.25994	2.4148691	45.81557
1100	4.800	-0.80151	2.4793087	44.74872	1485	3.556	-0.25950	2.4141368	45.82961
1105	4.778	-0.80069	2.4783189	44.76276	1490	3.544	-0.25907	2.4134059	45.84364
1110	4.757	-0.80015	2.4773385	44.77679	1495	3.532	-0.25863	2.4126794	45.85768
1115	4.735	-0.29948	2.4763626	44.79083	1500	3.520	-0.25820	2.4119544	45.87172

TABLES FOR THE SOLUTION OF

TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$
1505	3.508	-025777	2.4112317	45.88576	1890	2.794	-023002	2.3617691	46.96664
1510	3.497	-025734	2.4105115	45.89979	1895	2.786	-022972	2.3611954	46.98068
1515	3.485	-025691	2.4097937	45.91383	1900	2.779	-022942	2.3606232	46.99472
1520	3.474	-025649	2.4090782	45.92787	1905	2.772	-022911	2.3600525	47.00876
1525	3.462	-025607	2.4083651	45.94191	1910	2.764	-022881	2.3594833	47.02279
1530	3.451	-025566	2.4076543	45.95594	1915	2.757	-022852	2.3589156	47.03683
1535	3.440	-025524	2.4069458	45.96994	1920	2.750	-022822	2.3583494	47.05087
1540	3.429	-025482	2.4062396	45.98402	1925	2.743	-022792	2.3577846	47.06491
1545	3.417	-025441	2.4055358	45.99806	1930	2.736	-022763	2.3572213	47.07894
1550	3.407	-025400	2.4048342	46.01209	1935	2.729	-022733	2.3566595	47.09298
1555	3.396	-025359	2.4041345	46.02613	1940	2.722	-022704	2.3560991	47.10702
1560	3.385	-025318	2.4034377	46.04017	1945	2.715	-022675	2.3555402	47.12106
1565	3.374	-025278	2.4027428	46.05421	1950	2.708	-022646	2.3549837	47.13509
1570	3.363	-025238	2.4020502	46.06824	1955	2.701	-022616	2.3544266	47.14913
1575	3.352	-025198	2.4013597	46.08228	1960	2.694	-022588	2.3538720	47.16317
1580	3.342	-025158	2.4006715	46.09632	1965	2.687	-022559	2.3533187	47.17721
1585	3.331	-025118	2.3999854	46.11036	1970	2.680	-022530	2.3527669	47.19124
1590	3.321	-025078	2.3993014	46.12439	1975	2.673	-022502	2.3522164	47.20528
1595	3.310	-025039	2.3986197	46.13843	1980	2.667	-022473	2.3516674	47.21932
1600	3.300	-025000	2.3979400	46.15247	1985	2.660	-022445	2.3511197	47.23336
1605	3.290	-024961	2.3972625	46.16651	1990	2.653	-022417	2.3505735	47.24739
1610	3.280	-024922	2.3965871	46.18054	1995	2.647	-022388	2.3500285	47.26143
1615	3.269	-024884	2.3959137	46.19458	2000	2.640	-022361	2.3494850	47.27547
1620	3.259	-024845	2.3952425	46.20862	2005	2.633	-022333	2.3489428	47.28951
1625	3.249	-024807	2.3945733	46.22266	2010	2.627	-022305	2.3484020	47.30354
1630	3.239	-024769	2.3939062	46.23669	2015	2.620	-022277	2.3478625	47.31758
1635	3.229	-024731	2.3932411	46.25073	2020	2.614	-022250	2.3473243	47.33162
1640	3.220	-024693	2.3925781	46.26477	2025	2.607	-022222	2.3467875	47.34566
1645	3.210	-024656	2.3919170	46.27881	2030	2.601	-022195	2.3462520	47.35969
1650	3.200	-024618	2.3912580	46.29284	2035	2.595	-022168	2.3457178	47.37373
1655	3.190	-024581	2.3906010	46.30688	2040	2.588	-022140	2.3451849	47.38777
1660	3.181	-024544	2.3899460	46.32092	2045	2.582	-022113	2.3446533	47.40181
1665	3.171	-024507	2.3892929	46.33496	2050	2.576	-022086	2.3441231	47.41584
1670	3.162	-024470	2.3886418	46.34899	2055	2.569	-022059	2.3435941	47.42988
1675	3.152	-024433	2.3879926	46.36303	2060	2.563	-022033	2.3430664	47.44392
1680	3.143	-024398	2.3873454	46.37707	2065	2.557	-022005	2.3425400	47.45796

1685	3.134	-024354	2.3867000	46.39117	2070	2.551	-021979	2.3420148	47.47199
1690	3.124	-024325	2.3860566	46.40514	2075	2.545	-021953	2.3414909	47.48603
1695	3.115	-024290	2.3854151	46.41918	2080	2.538	-021926	2.3409683	47.50007
1700	3.106	-024254	2.3847755	46.43322	2085	2.532	-021900	2.3404470	47.51411
1705	3.097	-024218	2.3841378	46.44726	2090	2.526	-021874	2.3399269	47.52814
1710	3.008	-024183	2.3835019	46.46129	2095	2.520	-021848	2.3394080	47.54218
1715	3.079	-024147	2.3828679	46.47533	2100	2.514	-021822	2.3388904	47.55622
1720	3.070	-024112	2.3822358	46.48937	2105	2.508	-021796	2.3383739	47.57026
1725	3.061	-024077	2.3816055	46.50341	2110	2.502	-021770	2.3378588	47.58429
1730	3.052	-024042	2.3809769	46.51744	2115	2.496	-021744	2.3373448	47.59833
1735	3.042	-024008	2.3803508	46.53148	2120	2.490	-021719	2.3368321	47.61237
1740	3.035	-023973	2.3797254	46.54552	2125	2.485	-021693	2.3363205	47.62641
1745	3.026	-023939	2.3791023	46.55956	2130	2.479	-021668	2.3358102	47.64044
1750	3.017	-023905	2.3784810	46.57369	2135	2.473	-021642	2.3353011	47.65448
1755	3.009	-023871	2.3778614	46.58763	2140	2.467	-021617	2.3347931	47.66852
1760	3.	-023837	2.3772437	46.60167	2145	2.462	-021592	2.3342864	47.68256
1765	2.992	-023803	2.3766276	46.61571	2150	2.456	-021567	2.3337808	47.69659
1770	2.983	-023769	2.3760134	46.62974	2155	2.450	-021542	2.3332764	47.71063
1775	2.975	-023736	2.3754008	46.64378	2160	2.444	-021517	2.3327731	47.72467
1780	2.966	-023702	2.3747900	46.65782	2165	2.439	-021492	2.3322710	47.73871
1785	2.958	-023669	2.3741809	46.67186	2170	2.433	-021467	2.3317701	47.75274
1790	2.950	-023636	2.3735735	46.68589	2175	2.428	-021442	2.3312704	47.76678
1795	2.942	-023603	2.3729678	46.69993	2180	2.422	-021418	2.3307718	47.78082
1800	2.933	-023570	2.3723637	46.71397	2185	2.416	-021393	2.3302743	47.79486
1805	2.925	-023538	2.3717614	46.72801	2190	2.411	-021369	2.3297779	47.80889
1810	2.917	-023505	2.3711607	46.74204	2195	2.405	-021344	2.3292827	47.82293
1815	2.909	-023473	2.3705617	46.75608	2200	2.400	-021320	2.3287887	47.83697
1820	2.901	-023440	2.3699643	46.77012	2205	2.395	-021296	2.3282957	47.85101
1825	2.893	-023408	2.3693686	46.78416	2210	2.389	-021272	2.3278039	47.86504
1830	2.885	-023376	2.3687745	46.79819	2215	2.384	-021248	2.3273131	47.87908
1835	2.877	-023344	2.3681820	46.81223	2220	2.378	-021224	2.3268236	47.89312
1840	2.870	-023313	2.3675911	46.82627	2225	2.373	-021200	2.3263350	47.90716
1845	2.862	-023281	2.3670018	46.84031	2230	2.368	-021176	2.3258476	47.92119
1850	2.854	-023250	2.3664141	46.85434	2235	2.362	-021152	2.3253612	47.93523
1855	2.847	-023218	2.3658280	46.86838	2240	2.357	-021129	2.3248760	47.94927
1860	2.839	-023187	2.3652435	46.88242	2245	2.352	-021105	2.3243918	47.96331
1865	2.831	-023156	2.3646606	46.89646	2250	2.347	-021082	2.3239087	47.97734
1870	2.824	-023125	2.3640792	46.91049	2255	2.341	-021058	2.3234267	47.99138
1875	2.816	-023094	2.3634994	46.92453	2260	2.336	-021035	2.3229458	48.00542
1880	2.809	-023063	2.3629211	46.93857	2265	2.331	-021012	2.3224659	48.01946
1885	2.801	-023033	2.3623443	46.95261	2270	2.326	-020989	2.3219871	48.03349

TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	$\log \sqrt{s}$	$a + \frac{m}{s}$
2275	2-321	-020966	2-3215093	48-04753	2660	1-985	-019889	2-2875592	49-12827
2280	2-316	-020943	2-3210326	48-06157	2665	1-981	-019871	2-2871514	49-14246
2285	2-311	-020920	2-3205569	48-07561	2670	1-977	-019853	2-2867444	49-15649
2290	2-306	-020897	2-3200823	48-08964	2675	1-974	-019834	2-2863381	49-17053
2295	2-301	-020874	2-3196087	48-10368	2680	1-970	-019816	2-2859326	49-18457
2300	2-296	-020853	2-3191361	48-11772	2685	1-966	-019798	2-2855279	49-19861
2305	2-291	-020829	2-3186645	48-13176	2690	1-963	-019781	2-2851239	49-21264
2310	2-286	-020806	2-3181940	48-14579	2695	1-959	-019763	2-2847206	49-22668
2315	2-281	-020784	2-3177245	48-15983	2700	1-956	-019245	2-2843181	49-24072
2320	2-276	-020761	2-3172560	48-17387	2705	1-952	-019228	2-2839164	49-25476
2325	2-271	-020740	2-3167885	48-18791	2710	1-949	-019004	2-2835154	49-26879
2330	2-266	-020717	2-3163220	48-20194	2715	1-945	-019192	2-2831151	49-28283
2335	2-261	-020694	2-3158566	48-21593	2720	1-941	-019174	2-2827155	49-29687
2340	2-256	-020672	2-3153921	48-23012	2725	1-938	-019156	2-2823167	49-31091
2345	2-252	-020650	2-3149286	48-24406	2730	1-934	-019139	2-2819187	49-32494
2350	2-247	-020628	2-3144661	48-25809	2735	1-931	-019121	2-2815213	49-33898
2355	2-242	-020607	2-3140045	48-27213	2740	1-927	-019104	2-2811247	49-35302
2360	2-237	-020585	2-3135440	48-28617	2745	1-923	-019086	2-2807288	49-36706
2365	2-233	-020563	2-3130844	48-30021	2750	1-920	-019069	2-2803337	49-38109
2370	2-228	-020541	2-3126258	48-31424	2755	1-916	-019052	2-2799392	49-39513
2375	2-223	-020520	2-3121682	48-32828	2760	1-913	-019035	2-2795455	49-40917
2380	2-219	-020498	2-3117115	48-34232	2765	1-910	-019017	2-2791524	49-42321
2385	2-214	-020477	2-3112558	48-35636	2770	1-906	-019000	2-2787601	49-43724
2390	2-209	-020455	2-3108010	48-37039	2775	1-903	-018983	2-2783685	49-45128
2395	2-205	-020434	2-3103472	48-38443	2780	1-900	-018966	2-2779776	49-46532
2400	2-200	-020412	2-3098944	48-39847	2785	1-896	-018949	2-2775874	49-47936
2405	2-195	-020391	2-3094425	48-41251	2790	1-892	-018932	2-2771979	49-49339
2410	2-191	-020370	2-3089915	48-42654	2795	1-889	-018915	2-2768091	49-50743
2415	2-186	-020349	2-3085414	48-44058	2800	1-886	-018898	2-2764210	49-52147
2420	2-182	-020328	2-3080923	48-45462	2805	1-882	-018881	2-2760336	49-53551
2425	2-177	-020307	2-3076441	48-46866	2810	1-879	-018865	2-2756468	49-54954
2430	2-173	-020286	2-3071969	48-48269	2815	1-875	-018848	2-2752608	49-56358
2435	2-168	-020265	2-3067505	48-49673	2820	1-872	-018831	2-2748754	49-57762
2440	2-164	-020244	2-3063051	48-51077	2825	1-869	-018814	2-2744908	49-59166
2445	2-160	-020224	2-3058606	48-52481	2830	1-866	-018797	2-2741068	49-60569
2450	2-155	-020203	2-3054170	48-53884	2835	1-862	-018781	2-2737235	49-61973

2455	2.151	-0.20182	2.3049743	48.55288	2840	1.859	-0.18764	2.2733408	49.63377
2460	2.146	-0.20162	2.3045324	48.56632	2845	1.866	-0.18746	2.2729589	49.64781
2465	2.142	-0.20141	2.3040915	48.58096	2850	1.862	-0.18731	2.2725776	49.66184
2470	2.138	-0.20121	2.3036515	48.59499	2855	1.849	-0.18715	2.2721969	49.67588
2475	2.133	-0.20101	2.3032124	48.60903	2860	1.846	-0.18699	2.2718170	49.68992
2480	2.129	-0.20080	2.3027742	48.62307	2865	1.843	-0.18682	2.2714377	49.70396
2485	2.125	-0.20060	2.3023368	48.63711	2870	1.839	-0.18666	2.2710591	49.71799
2490	2.120	-0.20040	2.3019003	48.65114	2875	1.836	-0.18650	2.2706811	49.73203
2495	2.116	-0.20020	2.3014647	48.66518	2880	1.833	-0.18634	2.2703038	49.74607
2500	2.112	-0.20000	2.3010300	48.67922	2885	1.830	-0.18617	2.2699271	49.76011
2505	2.108	-0.19980	2.3005961	48.69326	2890	1.827	-0.18602	2.2695511	49.77414
2510	2.104	-0.19960	2.3001631	48.70729	2895	1.824	-0.18585	2.2691757	49.78818
2515	2.099	-0.19940	2.2997310	48.72133	2900	1.820	-0.18569	2.2688010	49.80222
2520	2.095	-0.19920	2.2992997	48.73537	2905	1.817	-0.18554	2.2684269	49.81626
2525	2.091	-0.19901	2.2988693	48.74941	2910	1.814	-0.18537	2.2680535	49.83029
2530	2.087	-0.19881	2.2984397	48.76344	2915	1.811	-0.18521	2.2676807	49.84433
2535	2.083	-0.19861	2.2980110	48.77748	2920	1.808	-0.18506	2.2673086	49.85837
2540	2.079	-0.19842	2.2975831	48.79152	2925	1.805	-0.18490	2.2669371	49.87241
2545	2.075	-0.19822	2.2971561	48.80566	2930	1.802	-0.18474	2.2665662	49.88644
2550	2.071	-0.19803	2.2967299	48.81959	2935	1.799	-0.18456	2.2661959	49.90048
2555	2.066	-0.19784	2.2963045	48.83363	2940	1.796	-0.18442	2.2658263	49.91452
2560	2.063	-0.19764	2.2958800	48.84767	2945	1.793	-0.18427	2.2654574	49.92856
2565	2.058	-0.19745	2.2954563	48.86171	2950	1.790	-0.18414	2.2650890	49.94259
2570	2.054	-0.19726	2.2950334	48.87574	2955	1.787	-0.18396	2.2647213	49.95663
2575	2.050	-0.19706	2.2946114	48.88978	2960	1.784	-0.18380	2.2643541	49.97067
2580	2.047	-0.19687	2.2941901	48.90382	2965	1.781	-0.18364	2.2639877	49.98471
2585	2.042	-0.19668	2.2937697	48.91786	2970	1.778	-0.18349	2.2636218	49.99874
2590	2.039	-0.19649	2.2933501	48.93189	2975	1.775	-0.18334	2.2632565	50.01278
2595	2.035	-0.19630	2.2929313	48.94593	2980	1.772	-0.18319	2.2628919	50.02682
2600	2.031	-0.19612	2.2925133	48.95997	2985	1.769	-0.18303	2.2625278	50.04086
2605	2.027	-0.19593	2.2920961	48.97401	2990	1.766	-0.18288	2.2621644	50.05489
2610	2.023	-0.19574	2.2916797	48.98804	2995	1.763	-0.18272	2.2618016	50.06893
2615	2.019	-0.19556	2.2912642	49.00208	3000	1.760	-0.18257	2.2614394	50.08297
2620	2.015	-0.19536	2.2908494	49.01612	3005	1.754	-0.18242	2.2610768	50.11104
2625	2.011	-0.19518	2.2904353	49.03016	3020	1.748	-0.18197	2.2599965	50.18912
2630	2.008	-0.19499	2.2900221	49.04419	3030	1.742	-0.18167	2.2592787	50.16719
2635	2.004	-0.19481	2.2896097	49.05823	3040	1.737	-0.18137	2.2585632	50.19527
2640	2.	-0.19462	2.2891980	49.07227	3050	1.731	-0.18107	2.2578501	50.22334
2645	1.996	-0.19444	2.2887872	49.08631	3060	1.725	-0.18077	2.2571393	50.25142
2650	1.992	-0.19426	2.2883771	49.10034	3070	1.720	-0.18048	2.2564308	50.27949
2655	1.989	-0.19407	2.2879677	49.11438	3080	1.715	-0.18019	2.2557246	50.30757

TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	log. \sqrt{s}	$a + \frac{m}{s}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{s}	log. \sqrt{s}	$a + \frac{m}{s}$
3090	1.709	-0.17989	2.2550208	50.93564	4520	1.168	-0.14874	2.1724308	54.35087
3100	1.703	-0.17960	2.2543192	50.936372	4540	1.163	-0.14841	2.1714721	54.40652
3110	1.698	-0.17932	2.2536198	50.93179	4560	1.158	-0.14808	2.1705176	54.46267
3120	1.692	-0.17903	2.2529227	50.41987	4580	1.153	-0.14776	2.1695678	54.51882
3130	1.687	-0.17874	2.2522278	50.44794	4600	1.148	-0.14744	2.1686211	54.57497
3140	1.682	-0.17845	2.2515352	50.47602	4620	1.143	-0.14712	2.1676790	54.63112
3150	1.676	-0.17817	2.2508447	50.50409	4640	1.138	-0.14681	2.1667410	54.68727
3160	1.671	-0.17789	2.2501565	50.53217	4660	1.133	-0.14651	2.1658070	54.74342
3170	1.666	-0.17761	2.2494704	50.56024	4680	1.128	-0.14621	2.1648771	54.79957
3180	1.660	-0.17733	2.2487864	50.58832	4700	1.124	-0.14596	2.1639511	54.85572
3190	1.655	-0.17705	2.2481047	50.61639	4720	1.119	-0.14577	2.1630290	54.91187
3200	1.650	-0.17677	2.2474250	50.64447	4740	1.114	-0.14552	2.1621108	54.96802
3210	1.644	-0.17649	2.2467421	50.67062	4760	1.109	-0.14524	2.1611965	55.02417
3220	1.639	-0.17622	2.2460721	50.69687	4780	1.104	-0.14494	2.1602861	55.08032
3230	1.634	-0.17595	2.2454031	50.72312	4800	1.100	-0.14464	2.1593794	55.13647
3240	1.629	-0.17568	2.2447375	50.74937	4820	1.096	-0.14434	2.1584765	55.19262
3250	1.624	-0.17541	2.2440740	50.77562	4840	1.091	-0.14404	2.1575778	55.24877
3260	1.619	-0.17514	2.2434126	50.80187	4860	1.087	-0.14374	2.1566819	55.30492
3270	1.614	-0.17487	2.2427531	50.82812	4880	1.082	-0.14344	2.1557901	55.36107
3280	1.609	-0.17460	2.2420956	50.85437	4900	1.078	-0.14315	2.1549020	55.41722
3290	1.604	-0.17433	2.2414401	50.88062	4920	1.073	-0.14285	2.1540174	55.47337
3300	1.599	-0.17406	2.2407856	50.90687	4940	1.069	-0.14256	2.1531365	55.52952
3310	1.594	-0.17379	2.2401331	50.93312	4960	1.065	-0.14227	2.1522592	55.58567
3320	1.589	-0.17352	2.2394816	50.95937	4980	1.060	-0.14199	2.1513853	55.64182
3330	1.584	-0.17325	2.2388304	50.98562	5000	1.056	-0.14170	2.1505150	55.69797
3340	1.579	-0.17298	2.2381804	51.01187	5020	1.051	-0.14142	2.1496487	55.75412
3350	1.574	-0.17271	2.2375316	51.03812	5040	1.048	-0.14115	2.1487864	55.81027
3360	1.569	-0.17244	2.2368831	51.06437	5060	1.043	-0.14086	2.1479281	55.86642
3370	1.564	-0.17217	2.2362356	51.09062	5080	1.039	-0.14059	2.1470736	55.92257
3380	1.559	-0.17190	2.2355881	51.11687	5100	1.035	-0.14032	2.1462231	55.97872
3390	1.554	-0.17163	2.2349416	51.14312	5120	1.031	-0.14005	2.1453756	56.03487
3400	1.549	-0.17136	2.2342951	51.16937	5140	1.027	-0.13978	2.1445311	56.09102
3410	1.544	-0.17109	2.2336486	51.19562	5160	1.023	-0.13951	2.1436866	56.14717
3420	1.539	-0.17082	2.2330031	51.22187	5180	1.019	-0.13924	2.1428451	56.20332
3430	1.534	-0.17055	2.2323576	51.24812	5200	1.015	-0.13897	2.1419986	56.25947
3440	1.529	-0.17028	2.2317131	51.27437	5220	1.011	-0.13870	2.1411571	56.31562
3450	1.524	-0.17001	2.2310686	51.30062	5240	1.007	-0.13843	2.1403186	56.37177
3460	1.519	-0.16974	2.2304251	51.32687	5260	1.003	-0.13816	2.1394771	56.42792
3470	1.514	-0.16947	2.2297826	51.35312	5280	1.000	-0.13789	2.1386386	56.48407
3480	1.509	-0.16920	2.2291401	51.37937	5300	0.996	-0.13762	2.1377971	56.54022
3490	1.504	-0.16893	2.2284976	51.40562	5320	0.992	-0.13735	2.1369586	56.59637
3500	1.500	-0.16866	2.2278551	51.43187	5340	0.988	-0.13708	2.1361171	56.65252
3510	1.495	-0.16839	2.2272126	51.45812	5360	0.984	-0.13681	2.1352786	56.70867
3520	1.490	-0.16812	2.2265701	51.48437	5380	0.980	-0.13654	2.1344371	56.76482
3530	1.485	-0.16785	2.2259276	51.51062	5400	0.976	-0.13627	2.1335986	56.82097
3540	1.480	-0.16758	2.2252851	51.53687	5420	0.972	-0.13600	2.1327571	56.87712
3550	1.475	-0.16731	2.2246426	51.56312	5440	0.968	-0.13573	2.1319186	56.93327
3560	1.470	-0.16704	2.2240001	51.58937	5460	0.964	-0.13546	2.1310771	56.98942
3570	1.465	-0.16677	2.2233576	51.61562	5480	0.960	-0.13519	2.1302386	57.04557
3580	1.460	-0.16650	2.2227151	51.64187	5500	0.956	-0.13492	2.1293971	57.10172
3590	1.455	-0.16623	2.2220726	51.66812	5520	0.952	-0.13465	2.1285586	57.15787
3600	1.450	-0.16596	2.2214301	51.69437	5540	0.948	-0.13438	2.1277171	57.21402
3610	1.445	-0.16569	2.2207876	51.72062	5560	0.944	-0.13411	2.1268786	57.27017
3620	1.440	-0.16542	2.2201451	51.74687	5580	0.940	-0.13384	2.1260371	57.32632
3630	1.435	-0.16515	2.2195026	51.77312	5600	0.936	-0.13357	2.1251986	57.38247
3640	1.430	-0.16488	2.2188601	51.79937	5620	0.932	-0.13330	2.1243571	57.43862
3650	1.425	-0.16461	2.2182176	51.82562	5640	0.928	-0.13303	2.1235186	57.49477
3660	1.420	-0.16434	2.2175751	51.85187	5660	0.924	-0.13276	2.1226771	57.55092
3670	1.415	-0.16407	2.2169326	51.87812	5680	0.920	-0.13249	2.1218386	57.60707
3680	1.410	-0.16380	2.2162901	51.90437	5700	0.916	-0.13222	2.1209971	57.66322
3690	1.405	-0.16353	2.2156476	51.93062	5720	0.912	-0.13195	2.1201586	57.71937
3700	1.400	-0.16326	2.2150051	51.95687	5740	0.908	-0.13168	2.1193171	57.77552
3710	1.395	-0.16299	2.2143626	51.98312	5760	0.904	-0.13141	2.1184786	57.83167
3720	1.390	-0.16272	2.2137201	52.00937	5780	0.900	-0.13114	2.1176371	57.88782
3730	1.385	-0.16245	2.2130776	52.03562	5800	0.896	-0.13087	2.1167986	57.94397
3740	1.380	-0.16218	2.2124351	52.06187	5820	0.892	-0.13060	2.1159571	58.00012
3750	1.375	-0.16191	2.2117926	52.08812	5840	0.888	-0.13033	2.1151186	58.05627

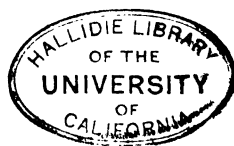
3700	1.427	-0.16440	2.2158991	52.04822	5920	.892	-0.12997	2.1138391	58.28087
3720	1.420	-0.16395	2.2147285	52.10437	6000	.880	-0.12910	2.1109244	58.50547
3740	1.412	-0.16352	2.2135642	52.16052	6080	.868	-0.12820	2.1080482	58.73007
3760	1.404	-0.16308	2.2124061	52.21667	6160	.857	-0.12741	2.1052096	58.95467
3780	1.397	-0.16265	2.2112541	52.27282	6240	.846	-0.12659	2.1024077	59.17927
3800	1.390	-0.16222	2.2101082	52.32897	6320	.836	-0.12579	2.0996415	59.40387
3820	1.382	-0.16180	2.2089683	52.38512	6400	.825	-0.12500	2.0969100	59.62847
3840	1.375	-0.16138	2.2078344	52.44127	6480	.815	-0.12422	2.0942125	59.85307
3860	1.368	-0.16095	2.2067063	52.49742	6560	.805	-0.12347	2.0915481	60.07767
3880	1.361	-0.16054	2.2055841	52.55357	6640	.795	-0.12272	2.0889160	60.30227
3900	1.354	-0.16013	2.2044677	52.60972	6720	.786	-0.12199	2.0863154	60.52687
3920	1.347	-0.15972	2.2033570	52.66587	6800	.777	-0.12127	2.0837455	60.75147
3940	1.340	-0.15931	2.2022519	52.72202	6880	.767	-0.12056	2.0812058	60.97607
3960	1.333	-0.15891	2.2011524	52.77817	6960	.759	-0.11986	2.0786954	61.20067
3980	1.327	-0.15851	2.2000585	52.83432	7000	.754	-0.11952	2.0774510	61.31297
4000	1.320	-0.15811	2.1989700	52.89047	7040	.750	-0.11919	2.0762137	61.42527
4020	1.313	-0.15772	2.1978870	52.94662	7120	.742	-0.11851	2.0737600	61.64987
4040	1.307	-0.15733	2.1968093	53.00277	7200	.733	-0.11785	2.0713338	61.87447
4060	1.300	-0.15694	2.1957370	53.05892	7280	.725	-0.11720	2.0689343	62.09907
4080	1.294	-0.15655	2.1946699	53.11507	7360	.718	-0.11656	2.0665611	62.32367
4100	1.288	-0.15617	2.1936081	53.17122	7440	.710	-0.11594	2.0642135	62.54827
4120	1.282	-0.15580	2.1925514	53.22737	7500	.704	-0.11537	2.0624694	62.71672
4140	1.275	-0.15542	2.1914998	53.28352	7520	.702	-0.11532	2.0618911	62.99747
4160	1.269	-0.15505	2.1904533	53.33967	7600	.695	-0.11471	2.0595932	62.77287
4180	1.263	-0.15467	2.1894119	53.39582	7680	.687	-0.11411	2.0573194	63.22207
4200	1.257	-0.15430	2.1883754	53.45197	7760	.680	-0.11352	2.0550691	63.44667
4220	1.251	-0.15394	2.1873438	53.50812	7840	.673	-0.11293	2.0528420	63.67127
4240	1.245	-0.15358	2.1863171	53.56427	7920	.667	-0.11237	2.0505374	63.89587
4260	1.239	-0.15322	2.1852952	53.62042	8000	.660	-0.11180	2.0484550	64.12047
4280	1.234	-0.15286	2.1842781	53.67657	8080	.653	-0.11125	2.0462943	64.34507
4300	1.228	-0.15250	2.1832658	53.73272	8160	.647	-0.11070	2.0441549	64.56967
4320	1.222	-0.15215	2.1822581	53.78887	8240	.641	-0.11016	2.0420364	64.79427
4340	1.217	-0.15180	2.1812551	53.84502	8320	.635	-0.10963	2.0399983	65.01887
4360	1.211	-0.15145	2.1802568	53.90117	8400	.629	-0.10911	2.0378604	65.24347
4380	1.205	-0.15110	2.1792629	53.95732	8480	.623	-0.10860	2.0358021	65.46807
4400	1.200	-0.15076	2.1782737	54.01347	8560	.617	-0.10809	2.0337631	65.69217
4420	1.194	-0.15041	2.1772889	54.06962	8640	.611	-0.10759	2.0317431	65.91737
4440	1.189	-0.15007	2.1763085	54.12577	8720	.605	-0.10709	2.0297418	66.14187
4460	1.184	-0.14974	2.1753326	54.18192	8800	.600	-0.10660	2.0277587	66.36647
4480	1.179	-0.14940	2.1743610	54.23807	8880	.595	-0.10612	2.0257935	66.59107
4500	1.173	-0.14907	2.1733937	54.29422	8960	.585	-0.10565	2.0238460	66.81567

TABLES FOR THE SOLUTION OF

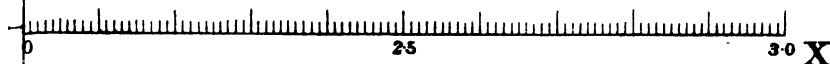
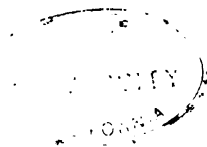
TABLE XXX.—continued.

Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{S}	$\log \sqrt{S}$	$a + \frac{m}{S}$	Sine of Inclination 1 over.	Fall in Feet per Mile.	\sqrt{S}	$\log \sqrt{S}$	$a + \frac{m}{S}$
9000	.587	.010341	2.0228787	66.92797	15040	.351	.008154	3.9113761	83.88527
9040	.584	.010518	2.0219158	67.04027	15120	.349	.008133	3.9102241	84.10987
9120	.579	.010472	2.0200026	67.26487	15200	.347	.008111	3.9090782	84.33447
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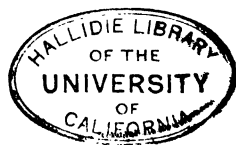
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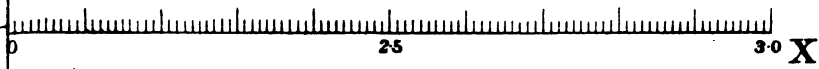
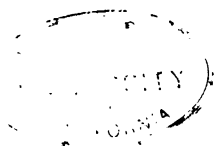
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